ComputerWeekly

Thursday, April 2, 1981

end-of-year Tax forms now available from stock

P60

formdesign

Tel: (07535) 55211

MBLICATION of the govern-

men's Finance Bill last Friday has mealed s threat to the existence of the 125 million per year cootract esoloyment market.

Under section 34 of the Bill,

matter employment agencies are is to required to withold 30 per test of their payments to contract

self who operate as sole traders or

The money will go to the Inland

miractors' tax bills at the end of

the rear. This will put them uoder

sect cash strain, since many will ad up effectively "londing" the laind Revenue money until the sales that year.

Thursday, April 9, 1981 Number 752 25p

UNIX' version sevon with Logica's support svaliable now contect: Kethleen Farrell togica Ltd 64 Newman St London WtA 4SE (el 01-636 5440 telex 27200

XENUX' Is

NEWS BRIEF

DP pay up 30%

14%-16% on average in the last 12 agement occupations apart from accounting and electrical engineering, according to Reward Regional Surveys in its latest fourmonthly survey, which shows programmers with an average increase of 25%, and senior systems anaysts and senior programmers with

LSI franchises

UK MICROCOMPUTER company LSI Computers of Woking is planning to set up a series of 20 to 30 franchises throughout the counrry to sell its Systems M-One and A-Two small business computers. The franchises will be encouraged to take responsibility for marketing and customer training, although LSI will continue to operate its own installation, after sales service and software de-

Hotel bookings

ONE hundred and fifty independent British hotels will be linked by satellite to the Best Western otel reservation system centred in Phoenix, Arizona, on April 7. A further 600 hutels located nighout Europe are expected to link into the system this year.

ICL-EMI deal

A MULTI-MILLION pound OEM agreement to supply magne-tic tape decks for ICL's ME29 range of contputers has been signed with SE Labs (EMI). It is expected that several thousand of the company's EMI 8800 mlcrocontrolled tape drives will be ordered ICL will market the unit as the Type 3551 magnetic tape

CSA plans November 'raid' to capture Japanese trade

ience, the Computing Services Association is organizing a software selling mission to the country in November. The delegation is be-ing formed in association with the London Chamber of Commerce

Department of Industry subsidy of £700 for each exhibitor prepared to travel, and has already attracted enquiries from over 30 companies and firm commitments from ten

The events in Japan will he held at the biggest British trade display

St Louis

holds the

biggest

IEXT TIME someone asks "what

is the biggest computer centre in the world", you can answer with

reasonable accuracy, the newly-opened headquarters of McDon-nell Douglas Automation in St

The 450-foot machine room

shown right houses eight IBM 3033s, a 3031, two Control Data Cyber 750s, a Cyber 730 and a

Cyber 175, which together

tabase transactions, 50,000 batch jobs and 30,000 time sharing jobs a week, for some of MDA's 3,000

The equipment is worth over

Over 500 operators run the site

I in three shifts

Talks abour the exact shape of the event are still being held with the first respondents to the CSA's software suppliers involved on the

after representatives of the Japanese computer industry visited the

CSA in London two months ago.
The Japanese outlined the diffi-

An. additional attraction of the exhibition is timing, in that Japan should by then have signed the current GATT agreement. This will force the Japanese to open to international tender their public sector computer requirement, a market estimated to be worth over

£7 billion in the next five years. Much of this will be for large software systems. Despite the in-herent problem of the Japanese language and the subsystems alexhibition organised by the Lon-don Chamber of Commerce, and a seminar-type event currently orga-nised by Douglas Moor of Peat Marwick Mitchell on behalf of the

the exhibition is £720, which includes free shipping of equipment

from the UK.

To have a stand and give a 3,500 word seminar paper will cost £940, but the seminar facilities alone will

The London Chamber of Conmerce has arronged two different accommodation packages fur around £1,000, and a flight only

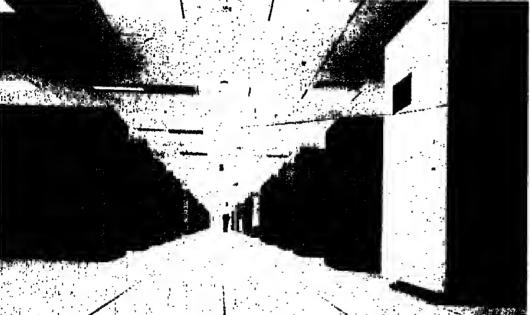
> across the network from termina tu Presicl centre.

Prestel would then support to cryption for secure transmission und Picture Prestel for the display of colour photographs, as well a serial and parallel character and hate coding methods that were beine worked out now.

The consensus was that delay in greeing standards would be hand til to Lurope as a whole. Current discussions were designed to pruduce recommendations for methods of making terminals compailhle with all European viewdata services without restricting terminal design unnecessarily.

This would enable display roding within the terminal to be implemented in a variety of wife.

eulties they are experiencing in de-vising suitable software for the machines they are exporting. Most ready generated by the Japanese to deal with it, the need for large telecoms and Japanese software companies are will remain.



secondary or flying picketing, the National Graphical Association and a sister company, Wilkes Busiwas restrained from picketing a ness Forms at Bilaton, arosa last month over redundancies and chambers by Mr Justice Forbes at member led to a strike.

NCR office systems move



Action (article Britain pro 1): Lands James Piece (Colchester (CO))

1 Declared Pro 100 to 100 per Press Life (Colchester Hoose)

Challesin Segline Secure (MANA) Action (MANA) TELEPHONE OF SHI 6153 in 61 this that, RECK, 89:4725

Marking time on viewdata

y Donald Kennett

NO formal agreement was reached at last week's discussion in Dana tadr on European viewdsta sucdards by the specialist group of CEPT, the European PTT's isso-ciation, because the West German negotiators wanted to refer the roposals to their industry.

It is oow hoped that a sel standards will emerge from the CEPT plenary in Stockholm in June. Prestel research chief Keik Clarke said it would not be dist trous for the UK if the final decision slipped back to 1982, because Prestel was pushing ahead and atternative display techniques had unly marginal advantages over

Enhanced Prestel versions would be tied to the spread of the Integrated Services Digital Net work based on System X which would provide 64Kbps data rathe

The contract marker is largely made up of individual prosummers and analysts who form hemselves into limited private mapanies or set as sole traders. This frees the contract agencies arm paying and accounting for PAYE and National Insurance teotributions. The contracturs is their invoices from their com-lete which the agencies pay in a light transaction.

suppressed white they made a gencies which had to collect and 30 per cent of their fee income for between 12 and 13 months while their tax affairs were settled." Knight said that the AlTS would be making another attempt to get the government to see small busings and Revenue. 'IBM in micro market by July'

Proposed tax changes could kill off small businesses

Govt hits at

contractors

While acting as a limited com-pany, the individual programmer has liabilities for his own PAYE,

but in some cases contractors have

not made complete payments and

34 of the Bill is designed to catch. But the effect will also be to hit

the genuine small company, in-

cluding small software houses formed by several contractors act-

Graham Knight, chairman of the Association of Independent Computer Specialists, said that

this was another attempt by the

up a computer business obtains much of his work through agen-

suppressed while they made a

government in suppress the forma-tion of small computer companies.
"Any individual building himself
"Many people started their soft-

"Their expansion would be Act would set up three new admi-

In the US.

Analysis' Group in Connecticut.

He discounts the possibility of IBM introducing a low cost personal computer. "It would be extremely hazardous, the profit margin would be too small, and the market is not ready."

I have a contract although he although he market is not ready."

However, he too expects distribution through Sears, as well as J. C. Penney and other stores.

Both IBM and Sears have refused to comment.

Tetail stores

IRM results in UK, Back page.

in both the US and the UK. Delivery will begin in the fourth quarter of this year, Crotty says.

An arrangement with Sears would tend to confirm earlier reports that the product will be aimed at the home systems market conference last week. Trabiowed his forecast by extending the product will be aimed at the home systems market. Crotty believes the system will be based on an Intel 8080 series this lack of concern at the product with a 24-line CRT with graphics, 64K memory. CP/M operating system, and a cost of plant worldwide in another twist, a theory that

North sinches European 32-bit misi Investment puts l'Ain Software File Micro News Company News C

MIDE THIS WEEK'S ISSUE



The way the act would work

deducted by the agencles obsrgea-

the contractor's company.

operated by contractors are not lla-

One senior manager at a major agency said that this section of the Bill contradicted earlier sections of

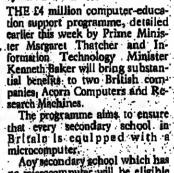
Many people started their soft-

nistrative functions, one in the agencies which had to collect and

bows out

Alex d'Agapeyell, foundér and one-time head of CAP, is leaving the most personal computer. "It would be extremely hazardous, the profit margin would be too small, and the market is not ready. However, he too expects distribution through Sears, as well as J. C. Penney and other stores. Both IBM and Sears have telegative destruction of the market is not ready. CAP has onted for a caulious plan involving only 35 employees at Microproducts. D'Agapeyell eovisaged wider plans to make MicroCobol a de facto world standard, and CAP's decision led to his departure, followed by those of departure, followed by those of other top Microproducts staff.

Nixtori disc manufacture Advice for micro buyels Disappointing H-terles Low-price Wordples 80 and Investment puts TA in red Software File



that every secondary school in Turn to back page

ARGARET THATCHER: stimulating

School micros

to boost Acorn

microcomputer.

Any secondary school which has no microcomputer will be eligible from June 1 for a 50 per cent government grant towards the cost of either the 380% system from Research Machines costing £1,680 or the BBC microcomputer from Acorn, which recalls as £260 plus VAP with a monitor and casette

by Parent-Teacher Associations of local industry.

Government funding for the scheme will come through the Department of Industry, and supplements the Department of Education's own £9 million microelectronics education fire gramme, which made nu provisio for supplying schools with compu

Monday's announcement was accompanied by a strategy docu-

Letters to the Editor Ripgramitiera Page
Op Spot
People
Data Analysis
Products
Saleshit

NEWS BRIEF

Buyers close in on FARS

THE APL software Itouse which crashed at the end of March, up for grabs, "It's all on the go, but there is nothing definite" the receiver said. "One company has dropped out of the running, but there are a comple of uthers who are interested and we are still getting inquiries." FARS managing director David Spencer esrlier this week said that an announcement

BACS upgrade

BANKERS' Automated Clearing Services of Edgware, Middlesex, has ordered an ICL 2966, the machine that can run jobs under DME and VME simultaneously. According to ICL, the 2966 is worth £1 million and will replace two 1904S machines at the Edgware centre, which is also equipped with twu 2960s. See Teknos at BACS, Page 4.

Lindop brush-off

THE LINDOP report on data security last week got the final brush-off from the Home Office.

In a two-page paper, Canno 8214, the Home Office remarked: "Governments do not commit themselves to implementing any proposals they may make, still less can they commit their successors." The Lindop committee was set up y the last Labour government.

Information year

CIVIL servants at the Departmen of Industry last week put forward a plan to designate 1982 Information l'echnology Year and Kenneth Baker, the Minister who was made responsible for information tech-nology in January, said that both he and the Prime Minister like the

WHY WAIT FOR YOUR WINCHESTER

Immediate delivery

●Up to 134 Mbytes

which will be supported by the

piana for specialist teacher

training, supported by a network of pilot information centres serv-ing groups of local education

authorities.
Paul Fisher adds: Acom could

Under £8,000 delivered and fully installed

Fully transparent with RM80 or RM02/31

Fully redundant system configurations

Call now-Woking (04862) 5077



* Trade Mark of Orgital Corporation

Human engineered ASCII VDU with detachable Selectric® AND THE PARTY OF T keyboard, green screen sydyel and

RAIR 30-32 Neal Street, London WC2 Tel 01-836 4663



what is thought to be the first

Birmingham High Court last week after an application from Wilkes (PCA) Data Supplies of West

US character and Ros supplier
NCR has firstly loined the ranks
of those battling for the Office of
the Putture market
An office systems division has
been set up with company vicepresident Robert Jones at he head
and a corporate strategy is being
aleveloped; although no details of
his.



May June

High performance editing graphics erminal around £1250 BATAB

M L.A B E

Troubled **OPM** boss in hospital

IN an unexpected turn of events at computer leasing company ron Goodman has entered a mental iospital in New York State.

The New Yurk-based company, which also has offices in London, iled for Chapter 11 bankruptcy on March 11. It is the object of several civil suits seeking to recover loans made to OPM against certain cum-puter lesses. The total amount nvolved is believed to be greater than \$100 million.

OPM's nwners, Mordecai Weissman and Myron Goodman, have each declared personal bankruptcy. They are the objects of lawsuits similar to those against their company. The company is now being run by James Hassett, a trustee appointed by the federal

OPM was primarily a lessor of 1BM mainframes and peripherals. The company's leases were unusual in that they operated under an "idemnity" arrangement, whereby OPM would lease its computers back from users if they were no longer wanted.

Losses occurred on many iliese leases because the computers leased back could not bring in much revenue when OPM placed them in the field sgain. OPM had

no iosurance to cover these losses.

The suits lodged against the company centre on leases involving one OPM customer, Rockwell been formally launched with International, believed to be the company's largest client. Rockwell's leases were the responsibilty of Myron Goodman.



HEINZ NIXDORF:"We have achieved a 25 per cent sales increase during the first quarter of 1981.

y Keith Jonea

AFTER a bitter legal battle and

Medical venture

BOC's venture in the hospital

computer systems area, British Medical Data Systems has now

and Telecommunications Agency

-Digital Equipment Company Itali

for Government use.

Wilkes Computing

Bush House, 72 Prince Street, Bristol BS14HU.

Tel: (0272) 25921. Telex 449205.

Nixdorf shuns bubbles for home-made discs

while in the Irish Republic, now a

major manufacturing source for

the company, the number of people employed has risen to 750.

In terms of specific products.

Nixdnrf's big drive seems to be in

first or second-ranking bank in

every European country except in

the UK. Banking devices and ter-

minals now account for 30% of all

Nixdorf now considers itself the

biggest European software house

with half company revenue coming

involving CMC's US parent

Nixdorf's revenues.

by Claire Gooding

40% sales increase.

BY the end of 1981 Nixdorf will be manufacturing all its uwn discs, which it sees as being the main incinary device through in the end

of the century. Bubble memory is suitable only for special applications, says the company, which does not see hub-ble devices having any significant share of the main peripheral

memory market.
The LK3000 persunal computer system will be discontinued inmediately except for special cus-

Nixdorf has indicated that the company intends to create products for ao integrated "office of the future". It has VLSI technology and has set up a sugatantial R&D operation in California.

Nixdorf says that the core of the future office will be the storing and filing system, surrounded by word processing, graphic input and out-put and finally input by voice processing devices.

The company will adopt the

Ethernet network standard and

use the X25 package switching

Microsystems is being drastically

diluted by a major new US share

'Happy' settlement

for Telecomputing

01-601 3044

01-861 3104 Owen Kelly 01-861 3500 x3574 Birinktoban 01-861 3500 x3578 Vis Sherat

Publishing Oirector: Dr. J. & & Thomas, Editorial Director: Chira Hipwest. Rutiliabed weekly on Thereday, Registered at the Rent Office as a newspa

BRANCH OFFICES
Birmingham: Lision House, 202 Welsell Road; Birmingham 842 (BA 621-256 /838
Manchester: Grove House, Skenon Road; Birmingham 842 (BA 621-256 /838
Manchester: MIS OWE 061Maw York: 205 East 42nd Street, New York, NY 10017 (610) 212) 867 2080

creased staff in almost every coun-Spain will receive £6 million in

Nixdorf will seek a Gent Stock Exchange quotation manufacturing investment while 1984, has increased turnover by the number of personnel in America has risen to 2,000, where per ceut last year, took on 1 inore emplayees worldwide will hire a further 1,000 people the company has experienced a Nixdorf has 450 staff in Japan

the company a 50 per cent the consolidated profit and count, from a profit of million Dm (£17 million) to 15 million Dm (£9 million). banking systems, led by the 8864 banking terminal. According to the company, Nixdorf now has banking terminals in either the

The impact on the balance she profit and loss was marginal with modest £200,000 increase between 21 million Dm (£4,200,000) i 1979 to 22 million Da (£4,400,000) in 1980.

This apparent profit slide we discounted by Helnz Nistonia when he presented the figure is week. He said that the connect had debberately taken s 60 miles Dm (£12 million) provisies on rental and leasing side of its be ness, to svoid a tax charge of the

ulthough Jerry Causley, miniging director of CMC in the UK, 78

from software and servicing Microdata settles two court actions

NORPENDENT advice for first

Etic Bird, manager of the Microsystema Centre, told Comation would make itself known to

ic Bird, manager of the Microsystems Centre: counting on the needs of small

Advice for first

time micro users

MULATING further growth this year to 1983, by which time beyindustry and expending the market with the period for the plant adjust of the HBC in the plant adjust of the HBC in the plant adjust i



For communications the system

which adds and subtracts at 400 to be 40% faster overall than any existing 32-bit machine. nanoseconds, multiplies in 500 na-noseconds and divides in 2,900 na-Fifty orders have already been

received. One system has been de-livered to Reading University and two to CERN in Geneva in the past The logical address space of the N500 is given as 4 gigabytes for program instructions and 4 gigabytes for dsta. The system em-ploys a 32K to 128K cache The basic system consists of a pair of computers, the 16-bit Nord memory, split into two identical areas, one for data and one for programs, so that both can be letched in parallel.

operate under the common Nord operating system Sintran, which gives full compatibility with the whole Nord range. conforms to the 1977 version of CCITT X25. There is an X21 op-The two systems share the main tion which allows the system to memory, which can be extended to a massive 32 megabytes. communicate with circuit

switched, as opposed to packet switched, networks. najor position in the European The language options affered with the systems include ANSI-77 cientific and research market and receptly won the £12 million American F16 fighter bomber flight simulator order, has been supplying 32-bit type systems alnce 1972, but the N500 is the systems include ANSI-17 Fortran, Cobol, Basie, Pascal, RPG, Simula, Algol and Coral 66. The basis system comes with a £75,000 to £80,000 price tag though the average value of configuration.

uing effort to broaden its custome base away from the current predominance of the scientific and to establish a non-Norwegian busi-

ness base. that if the company keeps up its current order intake for the remainder of the year and can keep tu the two-month delivery promise on the N100, turnovec could double from last year's £25 mil-lion, to £50 million. •Full Handver report on Page 6.

Pascal service

AN IBM Pascal service has been started by 21st Computer Systems of Twickenham. The company has acquired sole rights from the Aus tralian Atomic Energy Commis sion to distribute Pascal 8000 throughout the UK and Western

Bridging the floppy to hard disc gap

FLOPPY disc with a capacity of five megabytes has been presented by Willis Computer Supplies as a challenge tu drive manufacturers to fill the gap between existing floppy and hard disc drives. The disc is made by Californian media company Verbaum. The five me-gabyte floppy discs are a de-velopment of the discs made for use on the three megabyte drive Burroughs uses to its dual-drive MD122. Both Verbatim and Willis, one of its main UK distributors, believe that this is the wo

thiogs are going.

Naturally, Verbatim has made a prototype live-megabyte drive as its Sunnyvale headquarters to prove the capabilities of its discs, and is willing to supply informa-tion on high-capacity recording

lechniques to drive manufacturers.
The drive uses eight-inch discs with the normal six slots for sector marking, but the tracks are laid 150 to the inch instead of the usual 8 to the inch across the disc, and data is recorded at 10,000 bits per inch on the inner track.



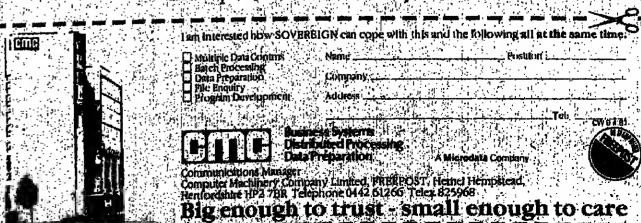
061-872 8881

021 358 4838



Taunton Deane Borough Council manage their housing waiting list allocation system

SOVEREIGN - CMC's multi-function, multi-processor business system.



NEWS BRIEF

THE industrial division of Com-puter Automation has produced a new debug tool called Software Scope. It is said to fill the gap

between the generation of test programs and the integration of

the programs on the tester

Enhanced Level 6

A NEW version of the Level 6

transaction processor, TPS 6 has been introduced by Honeywell. Extrs features include support of Cobol 74 for writing application

programs, an interactive screen formatter and a two-way transac-

A PASCAL package for the 6809 is now available for the PLEX and

tinn processing capability

Debug tool

'fills a gap'



ALWAYS KNOWINGLY LESS EXPENSIVE

Show us an advertised or quoted price lower then we've involced you within seven days of ordering end we'll refund the difference or renegotiate your order.

01<u>-688 2724</u>/6 Telex No.946179

TURNOVER

NETT PROFITS

NETT ASSETS

Atlantic Computer Leasing Limited

Atlantic Consputer (Engineering) Emitted

Atlantic Computer Leasing

Atlantic Computer Leasing BV

Atlantic Computer Leasing GmbH

Atlantic Leasing Limited

IltM Computer Brokerage

ATLANTIC IS PLEASED TO ANNOUNCE

ITS COMBINED TRADING RESULTS FOR 1980

£16,280,000

£ 1,037,000

£ 3,813,000

Osn year of consolidation and further expansion in Enrope - substantial lease arders

taken from the Dutch Government - further expansion of the UK Computer Leasing Company's large installations at British Aerospace, UKAEA, and Lloyd's - many

1341 systems delivered in 370 itsers in DK - IBM feature and mensury deliveries in 1380 systems will delivered in 370 itsers in DK - IBM feature and mensury deliveries in 1380 systems will deliver in many insulations - thing itsers concluded some estat

inpgrades fring 370 systems to 4300 systems - profits Samewhit depressed by high talerest rates = significant trend in the UK to cross-border acquisition of 4300 systems.

increased cosis - number of lease orders signed 28% up on 1979 although lower IBM

nteressed costs - number of tease argete signed 40 to up on 1979 among nower 15 m.

prices and a reduction in lease order values resulted by surnover virtually unchanged in

Lin.3m - conservative accounting policies continued with a provision of over £600,000

in respect of finare apprinte casts and the early repayment of a term town of £253,000.

From the Origin Bank - prospects for £987 excellent - profits improvement annexational with general full in human range for £987 excellent - profits improvement and Scandinaria.

Extract from the report of the Chief Executive and Managing Disector

Albhile's Annih Rupon and According to available in application to the Company Societary.

Combined Trading Results: 1.1.80 - 31.12.80

• IBM Systems Instellation

 1BM Systems Maintenance Industrial Leosing

£16,955,000

£ 1.164,000

£ 3,593,000

Atlantic House

England

Red Lian Court

Tel: 01-583 9381

Landon EC44 JEB

Telex: 268344 - ACL G

ICL plug-compatible scores with major front-end deal was a big disappointment'

frames.

secured a highly prestigious Clear-ing Services. BACS is the seventh ICL user to install Teknos 1603 front end processors as an alterna-

Jointly owned by the UK clearing banks, BACS continues to be s highly satisfied user of ICL main-frame equipment but went to Teknos for kit to front end its twin 2960s because Teknos offered s considers bly lower price and, even nore important, much earlier de-

BACS operations are based primarily oo batch processing. Put very simply, BACS takes transactions auch as salary payments, direct debits and standing orders from magnetic tapes mailed or hand delivered to its Edgware computer centre by shout 8,000 organisations all over the UK and organisations all over the UK and aorts them to creste tapes for each of the clearing banks.

But one application essential to the security of the whole BACS operation, logging magnetic tapes as they arrive, operates interactively and created problems last year when BACS wanted to transfer it from its original hosts — ageing dual 1904S machines — to the two 2960s installed at Edgware about three years ago. three years ago.

Until a few months ago, all the BACS systems on the 2960s ran in a VMB environment under the software enulator, BMEEP. But last year BACS decided to ehsing to 1900 DME in order to improve overall performance - memory usage and speed.

This change also coables the logging aystem to be moved over to of the 1900 Series upon which the logging communications software

depends.
Unfortunately, the 2900 Series Communications Network Processors that BACS bought with the 2960s were unsuitable for use as FEPs after the conversion to DME

because of the 24-bit word length.

BACS coosidered the ICL 7904 FEP, essentially s 1900 Series product, but ICL's lead times for the 7904 were too long to meet the BACS December 1980 schedule for s cut over to DME on the

So in Msrch last year the organi-sation contacted Teknos which was able to gusrantee earlier delivery of two 1603s and at a price much lower than the mainframe

supplier's quote.
ICL declined to comment on its offer of price or delivery.

The logging system was transferred to the 2908 early this year and the 1904S machines, front ended by two ageing ICL 7930 "scanner only" units, are now confined on the interactive processing side to handling program desing side to handling program de-velopment work under ICL's

Maximop system.

BACS sceepts about 800 topes a dsy at its reception desks at Edgware and in the City of London. There are four deska at each of the two locations, every one equipped with an ICL 7181 displsy terminal and an ICL 7505 Termiprinter linked online to the 2960s via the

formation such as the date, the muther of tape reels in each de-

The increase in the roles is weekly payments will account the importance of rapid tames. livery, the method of delivery and the method of return while the 7505s print receipts for handing and to meet this requirement effectively BACS is plant of the communication are over or posting to the relevant ornext year allowing dat and transmitted to Edgware from Many of the reels contain only a few feet nr even just a few inches of over the country rather the lap recorded data, su their contents are consolidated offline nuto n far

The service will be best smaller number of reels prior to processing on the ICL mainpowerful minicomputer and ment operating offline and magnetic tapes the ill "look" to the ICL maintenant." Monthly aglary payments alone provide BACS with five million like those handled at the moon.

items a month for processing and weekly payments are now seen as a major growth area because of the iocreased use of bank accounts system could go onlies, this among weekly-pald employees. not necessarily interactively.

How Teknos links to ICL

THE Teknos 1603 front end princessar system is both hardware and software compatible with the standard ICL 7903/4

At Barkers' Automated Cloaring Scrvices at Edgware two
1603s are connected via ICL Interface awitches to AMIO interfaces attached to the General Purpose Controllers of two ICL 2960 mainframes operating in a 1900/DME onvironment. Incoming communications lines are switchable to olthor of the 1603s via Digital Communications Corp as "T" Bar awitches. This con-

figuration was designed is a vids maximum reliabily at "fall-back" in the event of each

The 1603 is besed on Die MI6E minicomputer hadra; Future enhancements used by velopment include the 1601,1 processor system provide connection to both privite public natworks laconomic X25 and other non-ICL po cols. Teknos siso plas to ti chanca the aystem to me o VME/B environment.

The communications room separate from the main computer hall at Bunkers' Automated Clearing Service has Teknos 1603 from end processors. Seen here with BACS technical officer Ray Duggan, they link win ICL is moinframes to ICL 7181 interactive display terminals in a 1900 DATE environment.



Distributed DP growth

by David Graver

DISTRIBUTED data processing s expanding more quickly in Surope than anywhere else in the world, including the US, according to Gene Lockhart, European director of computer management consultancy Nolan, Norton.

Because of complex organisational and product attractures, as well as national appropathes to systems development, technology, and continunications, the potential foldistributed processing in Hurope is light. Controlling the growth of lattermation systems is management's greatest challenge, Lock hart added; while speaking at his company's one day lecture program on distributed data processing.

Conference report distributed data and expects this to be lineared the configuration of the current year.

Pathier, senior buyer for offices of the controlling the growth of distributed processing in Hurope is light controlling the growth of lattermation systems is management's greatest challenge, Lock hart added; while speaking at his company's one day lecture program on distributed data processing.

Conference report distributed data and expects this to be per added and is networking to the Chelmer's Prime mindonnals to the Wordcraft word processing the Wordcr

Schools micro boom for Commodore priced data line monitor/

STANDARDISATION by Essex Country Council on two micros for its schools and further education colleges has brought over £113,000 of business to Commodore over the past financial year, according to the council's buyer, Richard Palmer. He says the total spent by Essex in the year just ended was \$175,000 and expects this to be increased in the current way.

they have to maintain it is selves," says Palmer. "One long selves," says Palmer. "One long selves," says Palmer, "One long selves, bought to try, but that about the we have a very light reliable.

Essex."

d Essex has bought the KCNM.
from Kingston Computer as acquatic couplers for many it is per if 3000 machines attended installed and installed

THE announcement by IBM of the H-series late last year had been expected beforehand by industry salysts to solve all existing user polems at a stroke. It turned out to be a big disappoinment.

This was the message put over ist week by John McIntosh, marin planning director at Storsge Technology, st The User's Guide to the Impact of the H-series, s conference in London organised

Helatosh, whose own company i levelved with the development duty had expected IBM to annames was a family of machines maing in power from three to 20 mps, with up to 64 megabytes of min memory, up to 64 channels, ar cooling, new component techyum, a new relational database

FAST move

by Signetics

10.2 mips water-cooled inschine, data rate for the 3033 was 24 megathe 3081, with a maximum of 32 megabytes and 24 channels supported by existing software, MVS/SP and VM/SP. The only new feature on the software side, Release 3 of MVS/SP, will support the multiprocessor architecture,

any forthcoming H-series machines to provide more than four processors. The expected 3091 would be such s "quadratic" machine offering up to 18 mips and 64 megabytes, while two machines below the 3081, the 3061 and 3051, would be uniprocessors providing no more than six and four mips respectively.

But McIntosh was impressed by the improvement in the overall data rate offered by the 3081 compared with the existing top end terabytes (a terabyte being one 1BM 3850 MSS.

manager and major software changes.

1BM machine, the 3033. According to Melotosh, who worked with 1BM up to 1978, the maximum

1BM machine, the 3033. According to Melotosh, who worked with 1BM up to 1978, the maximum

1BM machine, the 3033. According to Melotosh, who worked with 1BM up to 1978, the maximum

data rate for the 3033 was 24 mega-hytes per second, although 16 me-gabytes was more likely in practice, while the 3081 was up on practice, while the 3081 was up on this at the only future for macrimes as big as the H-series models would be in handling new tasks, because four IBM 4341 Model 2s this at 72 megabytes per second.

McIotosh thought that the biggest improvement offered by Heseries would come from a change in channel architecture. He said with eight megsbytes of main memory each were far more efficient at executing multiple that the channel structure on IBM Lamond aaw the H-series

the days of the 1401 but that there linked to a network of regional chaonels where I/O operations could use any avails ble channel. systems, and via them to local As an employee of a major manufacturer of big disc machines. The "corporate" machine would run under MVS subsystems, McIntosh was no doubt pleased by figures which predicted that the US overall installed capacity of disc storage using the Hierarchical Storage Manager and some kind of masa atorage system.

Lamond underlined the general dissatisfaction with the existing



McINTOSH . . . Biggest improve-ment offered by H-series will come from a change in changel orchitec-

IBM second

supplier

by Brandon Gamester
USERS of IBM floppy discs, printer ribbons and other office eqipment products will soon have an alternative source of supply in the form of Chisholm's, the Loodon-based office supplier.

The company has set up a Com-

secured diatribution agreement

By buying in very large quantities, the company claims to be able

with s number of companies

to offer competitive prices.

Extended

MDOS/XDDS operating systems from OmegaSoft, n US company based in Oliio, and its UK distributor, SoftSell of Guildford. Standards have been extended to include hex data values, strings and string handling and rest world in-

Package list

PACKAGE vendors are being in ited to send details of application packages for microcomputers to the Microsystems Division of the NCC which is compiling a list for prospective purchasers at the London Micro Centre. Desils, including information on any constraints or limitations, should be sent to Derek Nicholls, The company has set up a Computer Supplies Division to serve the whole of the UK, and has Microsystems Centre, 11 Fetter Lane, London EC4 IPU.

CBASIC on Onyx Products available include computer labels, floppy disc storage systems, magnetic tape and fire

THE CRASIC compiler from Compiler Systems in La Mantia, California is now running in the Onyx C8002 under the Unix-like Onix operating system.

Hyperchannel system installed by SIA

neate FAST (Fairchild Advanced Scientify TTL) family of logic deworking ayatem made by Network All 37 products of the 74F line will be made and marketed by Sig-wir. The 74F family is pin-coun-mible with Fairchild's 74S Schot-

thy series but has 75% of the swittensumption and a 50% imh'the same time, Fairchild is signing lato a second source weenent with National Semicou-

pay Signetics is to second source
Pickfild Camera and InstruPolic RAST (Establish A Land Instruan aggregate data rate of up to 200Mbps for file sharing between s variety of mainframes.

Systems Corp in the US, is the Lundon-based buresu SIA. It plans to use the network to in-terconnect a Control Dats Cyber 175, Cyber 720 and an IBM 4331, msking them all accessible to users with IBM 2780, 3780 and HASP Hyperchannel is a coaxial cable

based networking system designed to cater for mainframe and mini applications rather than the micros and terminals end of the market. With network adapters costing

SIA's system, using three nodes initially, is to be supplied by the European division of US hardware monitor manufacturer Tesdata, whose product marketing manager Martin Wildron said that the

gan in the UK only last year, sl-though it has been sold in the US





Digilog make

greater.

On your left, the still new Digilog DLM III, the lowestmulator with anything like its performance.

On your right, the brand new Digilog MSU III, a dual-drive min lioppy diskette mass slorage unit for data line initoring operations.

Souple an MSU III with your Mill and your DLM III's Deflormance, already great, is greater.

proper details separately and together - and luli specifications, please use the coupon. Or the lesphone

WE'LL GET YOU THROUGH

(M) MOTOROLA LTD. . Codex (UK) Limited 105 Lansdowne Road Croydon CR0 2BN. Talephona 01-680 8507 Full DLM III/MSU AL facis, please

Position

'International' fair has very local character

THE biggest single section of the Hanover Fair is now electronics and computing, and over 700 different sellers and manufacturers were there last week to display

But the international character of the exhibition seemed questionsions in the shape of Japanese com-panies like Nippon Electric and Mitsubishi, many of the American companies were represented only by their local and very German

In many respects the fair looks very like a German fair far Germans, with outsiders free to come in If they want to.

The other noticeable characteristic of Hanover is that it is a "finshed product" event. There were very few significant product or deelopment annnuncements.

Apart from the Norsk Data 500 machine, the most interesting developments were on the Japanese and some of the East European

lakra, the Yugoslavian manufacturing conglomerate, was showing a much improved Z80-based minicomputer called the Iskradato 80. The machine won a design award at the pre-fair preview, and comes with 32K or 64K main

The machine is designed as a network controller with up to 16 work-stations and ruo nn a CP/M lookalike operating system called The Yugoslavians see Germany as their main European market,

ter. Because of the intricate mar-keting arrangements the Japanese have within their own country and with various European companies the two principal mainframes, or rather the two major product streams which are actually the alternstive machines fram the same range, are sold by two European

companies.

The mainframe line from which Hitachi and Fujitsu sell the alternative models appears in Europe as the Siemens 7.880 (Fujitsu M-200) and the Olivetti OH5500 (Hitachi M-180). No Japanese stand

range has a considerable market share in Jopan, was not at Ha-nover. NEC (Nippon Electric), the only Japanese company running its own complete marketing operation in Europe, also avoided an appear-

£2,000 including printer.



ity nf dazzling Japanese stands was to find the parent and the compute the independent small business machine manufacturer, showed its 243 micro-mini for the first time in

Matsushita, currently runtoured to be arranging a component deal with iBM, launched its full per-

Burope.

Under the Panasonic brand name, the My Brain machine has appeared as the JD-850M. Based on an 8085A microprocessor with 56K DAM, the prachine has two 56K RAM, the machine has two floppy disc units as standard, each with a capacity of 1001 K-bytes. 1-180). No Japanese stand owed a mainframe.

Mitau biski, whose Melcom

JD-800M (8085A + 56K RAM)

Wordplex 80: designed to replace existing screen models.

LOW-COST word processing was the theme of the relatively few oew products for the office launched at

A new terminal from Wordplex, intended to replace all the com-

pany's existing screen models, was the most surprising eight of the show, especially its low price bringing it into competition with the recently announced cheap machines from giants IBM and Wang

80, as the new range is called, has yet to be announced, but it is

selling in Germany typicolly for £4,500 — which puts it in the Displaywriter/Wangwriter lengue, although features have not been reduced as in the IBM and Wang machines.

machines.

That apart, there was a large

range of electronic typewriters, some from newcomers such as Remington Rand, Japanese maker Brother, and small Texas firm

The most ominous news for

Western suppliers, however, was the first sight of screeo word

THE Finance Bill last week started the process of filling in the details of payroll changes, to be effective in April 1982, with two significant alterations to existing practice which will affect computer programs.

Wordplex 80 stakes

low-price claim

shiba, both with German price tags

of less than £4,500, were on

display and Sharp was also show-

ing a desk-top prototype inkjet

The other Japanese arrival of importance for the office systems market was a table-top laser prin-

ter from Caoon - described, but

not demonstrated last week which uses a semiconductor to produce

the laser, reducing size and cost, one-off OEM only, to \$9,000. Xerox demonstrated its holf-

page-screen version of the 860

word processor, selling in Germany for £6,000, low pricing by Xerox standards.

Wang exhibited powerful new

word processing software facilities,

and Siemens hod Its system 5.500

The Braziliao computer in-dustry was a notable visitor at Ha-

nover, showing terminals, small business machines and even a per-

With the introduction of the planned Employers' Statutory Sick-Pay Scheme, considerable

black screen.

processors from Japan.

A prototype from Sharp and an priced at \$940.

Finance Bill closes

sick pay loophole

was quoted at abnut £3,000.
Toshiba iaunched two small computers, a word processor dedi-cated mini priced at £5,000, and a small 64K machine called the T200 which is priced at just over

Packet switching 'lift-off' ahead

by Brandon Gamester

puts TA

in the red

by Dooald Keneett ASTRONOMIC Brown HEAVY investment in product development has caten away the profits of West Germon computer forecast for data communication troffic on the European particular switching octworks, Britis Telecom loternational disa nd office equipment company Triumph Adler.
Full details of the company's 1980 results are not yet available but it has indicated that although it operated profitably in 1979 it will show an overall loss for 1980.

staff told its customers in med.

Speaking at the first diplanned series of temian 6 signed to keep customers in med of current and future service, and current and future services are serviced as a service service service service services and current services are services as a service service service services and current services are services as a service service service services and current services are services as a service service services and current services are services as a service service services and current services are services as a service service services and current services are services as a service service services and current services are services as a service service services are services as a service service service services are services as a service service service service services are services services and services servic operationa section head he

Duocombe said that initial a mand for IPSS has surpided a embarrassed British Telecor.
Software problems had in trated attempts to expand its is don packet switching exchange til the end of last year, but for had been sorted out with contractor and it was now pos to get a connection on the ini was ordered.

However, he added, point users were being advised to it uotil the summer, when one tioos to IPSS would be not a PSS, the national packet need, and new network addresses we be allocated to the 300 min

PSS itself had also suffered by software problems sad m connections had been delayeded tests of its ability to hands have traffic were completed. Work is begun to add the 200 users after walting list to the 35 users show connected to the pre-openion service, although British Teles did not want to open the floring to oew applicants. It was hoped? start the full service next month.

range including the top model with an impressive full-pags white-on-Datapoint showed its new 8300 processor for its integrated

By late next year, all polic packet switched traffic woold keep research will decide whether to route immittional traffic via IPSS or Burnet.

Burnote Itself would die but it have no four weers and to reside three or four years and be report by IPSS-type nodes througher

This was because it was b before CCiTT's recommendate
X25 for users and X75 for never interconnection were finelist

implemented recently from hear Kong and Spain, and they would become two-way links in a fer

months.

Next year, IPSS would be linked to Central and Son America, Iarael, Bahrain, its United Arab Emirates, the United Arab Emirates, the Bast and I2 countries in Suron.

The Prime Minister is brook to be urging an early decision in favour of arrangements for British Telecom to raise an early 200 million to £360 million to support in planned £2.2 billion invested programms. The Treasury was to make sure any curt may raised would result in order in industry and not large was industry and not large was creases for British Telecom sur lost. The effect on payroliprograms is far from clear. The Employers' Statutory. Sick Pay Scheme proposals have not yet been announced and a Bill encompassing them has been withdrawn from the House of Commons.

The other Finance Bill change is the requirement that benefit of an employee's use of a car be put through the payrell and charged to tax. In effect it is a benefit in kind that is taxable but not payable, and has an opposite effect to pension contributions under the "net pay" scheme.

Investment Turnover rose some 30 per cent in 1980, from DM1.24 billion to DM1.65 billion (£350m). This increase, however, is largely a reflec-tion of the company's takeover of Penec in the US, at the end of 1979. Turnover rose by only 7 per cent when Pertec's figures are lo 1980 TA invested more than DM100 million in product de- Vic Green, director of Queen Mary College computer centre, with the ICL velocoment. Distributed Array Processor.

Queen Mary College's DAP comes through with first-class honours

NEWS to raise spirits at troubled ists.
ICL comea from Queen Mary Col-ICL comea from Queen Mary College, London, where the Distributed Array Processor added to OMC's ICI 2000 has marked in a commercial bureau. Users have QMC's ICL 2980 has matched its to write their own programs in original apecification and its DAP Fortran, but the language performing extremely well, cording to the director of the tn Green, and plenty of assistance QMC computer centre, Vic Green. About 100 research groups all over the UK are now running jobs on the DAP to evaluate the effect

of its high level of parallelism on their data processing workloads. Users can gain access to the DAP service via the Science Research Council's own networks or through British Telecom's Packet Switched Service or, if they are based in London, via the London Most users are university groups with funding from the Science Research Council, and while the majority are involved in sciantific/ College's Metronet. technical type work usera also in-

each of which is loaded with the

same coding simultoneously. Applications cover three main areas: Image processing, simu-lating and calculation. Image is available from the DAP Support Team at QMC led by Professor Dennis Parkinson, seconded from processing includes jobs such as pattern marching, map and scene analysis and VLSI circuit design. Simulation spaus a wide range of subjects including highly practical spplications like weather

odelling.
Calculation work covers applications requiring enormous compu-tational power such as the analysis of pipe networks.

French takeover lays 'base' for Euro-giant

/Jack Gse was citated in your ago, many MAJOR step towords creating partner turnover has progressed ever since at the same 20-25 per Europe's biggest database for economic, financial and technical in-formation has been taken with the equisition in Paris by DAFSA of i majority stake in the publishing firm Societé Nouvelle d'Edi-

DAFSA has obtained a 57 per cent share in SNEI whuse other big partner to the tune of 33.5 per cent le Société Natinnole des En-

treprises de Presse. The alliance brings together the two biggest French firms in the

DAFSA's chairman Pierre Cabon says his company hopes to raise £9 million to set up a data-base. The Ministry of Industry, has

DAFSA, which has a staff of the compared with SNEI's 180, the firm's rate uf growth.

was created 11 years ago, like its

DAFSA's expital is shared be

iween stockbrokers and major bonks. It publishes a number of finoncial "bibles", including Llai-

sons Finoncières which cover the links between 30,000 firms.

SNEI'a Kompass publicotions

cover 60,000 companies.

Canon into micros

ANOTHER step from calculators to microcomputers is being made by Canoo with the release of its CX-1 and BX-III series. The new pipment is claimed to have tan m's real entry into the microcom-

for the middle of June. The pack-ages will be edapted from those running on the BXID.

The CXI has a 12-inch display times the power of Canon's current city, a querty keyboard and ten-product; the BXID, and o com-pany spokesman said it was "Can-drives with 500 kilobyte capacity cach (320 kilobyte user), and 128

PRODUCTIVITY'81 CONFERENCE AND EXHIBITION 28,29,30 April 1981

KENSINGTON EXHIBITION CENTRE

99 Kensington High Street, London W.8. (Nearest Tube Kensington High Street)

Productivity is the keyword in beating the recession. PRODUCTIVITY'81 is a unique forum of a conference; workshop and exhibition to help you understand how computerised techniques can increase your organization's

PRODUCTIVITY'81 should be of interest to all organizations. However two main areas are highlighted.

DESIGNENGINEERING/COMPUTER AIDED DESIGN AND MANUFACTURING

Computer solutions for engineers, architects, designers and management.

CONFERENCE Keynote speakers presenting on current and future trends in commercial and erigin coring applications and their impact on Productivity.

WORKSHOPS Product presentations and case studies on computer systems featuring companies who have used them to increase Productivity

COMMERICAL, FINANCIAL AND ADMINISTRATIVE

Computer solutions for business executives. financial planners and accountants, production and data processing management

EXHIBITION Live demonstrations of computer hardware and softward including. CAD/CAM Drafting Systems' Commercial and financial

Numberical Control Birilte Element Applysis Management Information Office automation :

packages Bespokesoftware services

Communication and networking systems

HOW TO ATTEND

For an invitation please telephone or telex the PRODUCTIVITY 81 Conference Secretary Telephone: 01-572 7400. Telex: 938371 or return the completed coupon to
PRODUCTIVITY '81 Conference Secretary
Prime Computer, The Hounslow Centre,
1 Lampton Road; Hounslow, Middx, TW3 IJB.

POSITION COMPANY ADDRESS No. of tickets required [4]

* Delegates need adjust on species (inly - need in section charge

APL ★ PLUS 1981 EDUCATION PROGRAMME

APL for the beginner or the experienced user

improve your APL with Allen J. Rose

APL*PLUS is holding an intensive one-day Advanced APL Topics course on 27th April 1981; the course will be given by Allen J. Rose, co-euthor of "APL - An interactive

The course, which is designed for eclive APL programmers, shows how to improve the officiency of programs by using edvanced APL leatures end programming techniques. The course makes extensive use of the

APL*PLUS time-sharing service and covers:

Programming style and productivity Advanced APL functions end featuree. Performance consideratione

The course tee of £150,00 (+ VAT) trictudes all course materials, computer time end

Learn APL in 3 days

APL*PLUS is holding its hext 3-day APL Introductory course on 11-13th May 1981. The ocurse is practical: by the third day relevant to their working environment

enjoyeble end silmuleting. During the course extensive use is made of the APL*RLUS time-shering eervice. The course covers:

 Components of the APL lenguage ●Programming in APL

 Dala handling in APL. The course fee of £300 (+ VAT) includes ell course meteriels, computer time end

How to book

To ensure your piece on either of these courses return the coupon below or call Veronica Miller on 01-242 B135.

Other seminars

Other APL*PLUS seminars in April Include: Computer-elded thinking for finencial executives, given by Allen J. Rose,

Devid Terwey, 30th April Please tick the coupon for details

APL*PLUS Limited

Students do not need e computing
Students do not need e computing
background any numerate person will find it. 50-52 Chancery Lane, London WC2A 1 HL.
01-242 8 135.

practice which will affect computer programs.

Sick pay met by an insurance company for a trust fund will be treated as taxable, in the same way as if it had been paid by the company. This closes a loophole through which employers have been able to see that employees receive a sick payment close to their average net pay. Using an insurance company, employers that is tax in an insurance company, employers that is tax in that is tax retained the benefit of the PAYE contribution. In-house APL, given by Allen J. Rose and

Majority bank union refuses 10%

backgroundt effly humerate person will find it 50-52 Chancery Lane London WC2A THL OT 242 8135.

To: APL ** PLUS Limited, 50-52 Chancery Lane London WC2A THL OT 242 8135.

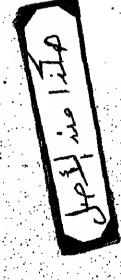
If Banking Instruces and Financian Land Interest of the union, and the control of the property of the property of the property of the property of the control of the

putet market," Software packages for financial Software packag Four additional mini-disc drives lime and effort. And if you're involved with

computers in education, you've really gol your homework to do. Choosing systems, arranging finance, software choice, programming languages as well as the new applications and uses of computers in schools and colleges.

Now your liring hours of data processing four-finding are over Educational Computing is a subject to be subject to the computing is a subject to the computing is a subject to the computing in the computing of the computing is a subject to the computing to the computing of the computing to the computing the co So don't risk failing your final choices because

A AUCIL	A locis Sun	CUD8.	Educa	tional L
Statement Copy		MARK OF	AATTI	111111
	#/PO ox diodya in	contri dated		14
	9 1		الملر	11/5
- Company		20	1	
1	- 17 A	ATTACA A		
Sec. in	Marine Carrie			2002-
TIME	04360 M			



A SALESISTOCK system which is aimed at sorting out the problems faced by stockists supplying motor parts comes from Micro Computer Centre in South London.

counting details, as well as producing monthly sales transaction reports. Its aptional extras include dual language screen displays for non-UK parts, remote terminal aperation for stores

Centre in South London.

The package, called Major Mate, keeps track of up to 7,000 numbered fiems, and takes into occount VAT payable and other invoicing details. It runs on the Commodore Pet with disc drive and printer.

The package.

The

Your computer

should spend its time

solving problems not looking for them.

The package automatically deals first-time user Terry Bennett, proprie-with stock transactions and ac- tor of Aegis.

UK Son of Mumps catches on in the land of its father

has been scooping major contracts with oil companies and selling back to the US a system which originated in Masssehusetts, at the rate of nearly 50 a year.

Computer Deaign Systems, which started as a two-man team in an end-of-terrace house in Pendlebury, Salford, has built up to a 25strong outlit with a £41/2 million turnover on the strength of the MIIS operating system, a desceo-dant of the medical operating

system Mumps.

MIIS is a real time, multiprogrammer opecating system, with a high level language which is de-signed to cope with dats management, and particularly large data-

bases; on minicomputers.

While the DP world has only recently begun to make a noise about giving more power to the end user with auch facilities as ioteractive inquiries and instant development, a small but highly profitable firm in Massachusetts has been approaching similar eods through the specialised route of

S VAR=1, X=14 C V.DU O: LA(1) COM T LA(1) ?3N C VDU@ERR C I A' ?2N"/"2N"/"2N

Although not easy to read for the uninitiosed, MIIS is easy to learn and produces deuse economicol code. The top has one of ten, of similar length, which make up an order entry program. The example below it is a complete checkbook tion of date forman.

Medical Information Technology Inc first designed Mumps in the lste Sixties for the health industry oo Digital Equipment PDP-11s, and Digital itself adopted the system.

Meditech by then had refined it

and speeded it up to produce a more powerful and wide-ranging tool, the Meditech loterpretive Information System, MIIS was released initially in the late Seventies for the Dsta General range, PDP. l line and IBM's Series !.

MIIS is ao interpretative language which is part of a memory-resident operating system. The OS

re-entrant code and memory partitioning, and since it does not access the discs for "housekeeping", I/O channels are left free for applications to use. This economy means that MIIS can support more termioals: in some installations more than the manufacturer's own

Discs are treated as an extension of main memory and the retrieval software removes the need to open or close files or specify file layouts within application programa. There are also string handling and validation facilities to speed up applications, and as the code can be abbreviated (tu one letter, plus parametera where occessary, as here are only 26 comounds) large mounts can be run in une partiion with more efficiency than is usually associated with interpreta-

tive languages (see Figure I).
MIIS was developed by people who had been involved in ortificial intelligence research at Mossachuintelligence research at Mossachu-setts Institute of Technology, and therefore did not follow the tradi-tional operating aystem philos-ophies — or lack of them — of its time. Among Meditech's highest priorities were reliability, perfurm-ance and security since the section ance and security since the system s operated nn dedicated machines 24 hours a dny as well as on its nwn time sharing network. In clinical data management, reliability is critical, and the relationships be-

Data is stored by higical name used to rely on a 'worker-up' sho had to know a great deal. Now he and con be retrieved using any number of different access keys.

Records are variable length, and files can expand or contract as necessary, while the software cod-

ig remains unchanged. when CDS set up in 1975 and started the search for design tools, portability, ease of use, flexibility and upward transportability were all high on the list of priorities. Chairman Arthur Britch had an atypical DP background in angiatypical DP background in engi- keta.

neering graphics, where the relationship of items is more in-portant than the data content and MIS seemed to meet all the ork-

"To get anywhere in graphs you need atructured data. The same techniques applied to on mercial systems led to structure databases. The savantsge # # with MIIS is that it is running or small machines, extremely feet

The structured database set a by MIIS lends itself to applications where users need different views the same data, a similar philosoph to the "relational" approach a CDS has sported this potenti and has concentrated on verted

markets, with users who may will son during periods of peak traffic, want to expand. As well as major contracts with Shell and Esso ke He could not see any dominant distributed online systems. CDS has turned its attention to

This is basically concerned with interpreting drawings for build-ings where features have to be imken down into various hems for pricing so that contractors can tender accurately for the job.

specialised applications such as

"MIIS has pravided an interior between the taker-off and the sti-mator," explained CDS's quanty surveying expert Ken Head. "The chap who's pricing the bit wants everything in a different arder from the chap who's tween date items are of a specialised nature with which MUMPS, and later MIIS, had to which make up the windows had to which whic

> spot for themselves. Because it offering a tried and trusted solu-tion, MIIS ahows signs of breaking out from the CDS "big boy" apecialities of plant hire, oil and fuel maoagement, construction and insurance, and into other man

Ring our Action Desk on 025467694 for more information.

TERMINALS

Online's Distributed Database conference in London last week. "If line costs are cheap, organi utions will centralise their databases," Taylor said, "but if they re expensive they will distribute

by Donald Kennett COMMUNICATIONS costs will

be the driving force behind the

second of distributed processing,

consultant Dr Frank Tsylor said at

known quantity, but my feeling is continue to rise. It is unlikely s revolution in that area would take less than four years, so if it happens there is time to take account of it in the next redesign of the

With both voice and data using digital transmission, there would be surplus capacity during offpeak hours which the PTTs ruight fer at rates attractive for updating in systems with central control but little contact between proces-

> n spectrum of distribution with remute necess to a central system at

A distributed system could cost In between were decentralised more to implement than one based mit a single mainframe and a need processing with no communica-tions, distributed applications for frequent structural changes sharing centrally-held dsta, visibly could point to s centralised distributed data (where the user had to know where each item was) But an optimally distributed system could be cheaper to run, sad invisibly distributed dats (but

without replication).

Tsbulating the presence of desirable attributes, Rothnie sugsave staff time by having a quicker response and by providing a fuller gested that performance improved smaller uoits involved to keep beisteadily down the list towards the fully redundant system, but more

Communications costs will speed

spread of distributed processing

Introducing the conference, chairmsn Dr Jerry Gross of con-sultancy Data Logic said that here problems emerged as well. Centralised systems scored badly on communications costs, was a strong thrust towards distrioution of databases stemming were top of the list for economic from the rate at which prices of of scale: the marginal cost of addprocessors and peripherals had fal-len, but many problems which had caused grief 10 years sgo still ing more data or more transactions was less up to the limits of system capacity and overheads were lower on buildings, security measures and staffing. existed - chiefly because of slow links between nodes.
Dr James Rothnie (Computer Corporation of America) described

Separate processors and distri-buted applications militated

sed databases in the past.

system scored all round, with indelinite expandability suggested as its most significant benefit.

luded how to handle distributed query processing, how 10 ensure that repliested updates were confrom faiture back into the system and how to manage the directory

fragmented items.
Rothnie highlighted three of the ued and correct operation in spite. of failures. control, where potentially hundreds of users were busily updating the same items which they each thought of ss their own, had For example, if a node A ini-tisted a transaction to debit B and been a problem for many years credit C and n failure stopped C

with online systems. Solutions which brought with them excessive synchronisation traffic had to be avoided.

Distributed locking mechanisms could be used, with one copy of each item designated the primary copy on the bssis of traffic patterns xpected at design time.

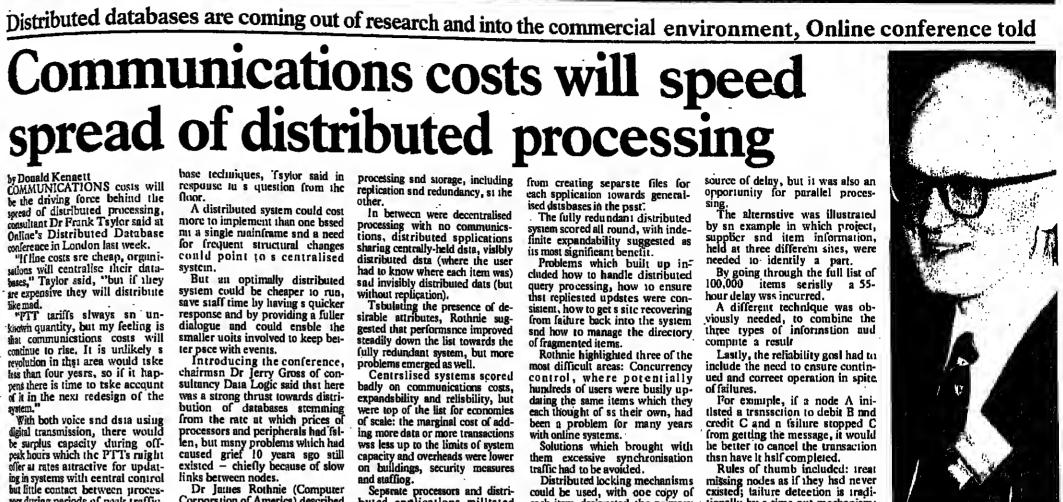
be better to cancel the transaction than have it half completed. Rules of thumb included: treat

missing nodes as if they had never existed; tailure detection is traditionally by a time-out mechanism;

The alternstive was illustrated

A different technique was ob-

hour delay was incurred.



TAYLOR . . . "Communicate

WILCOX . . . "We should be using

Problems of DBMS design

bi David Craver -

(DBMS), according to the presentation made by Dr Stefago Spacca-

is to shaure that users were una- tenauce and develop "There is no shortage of pro-grammers - management of pro-grammers - management of pro-grammers is the problem," Wilcox relating to the UK requirement. ome three times slower than the same package and the

essential to undertake as de communication costs. do so."

capabilities, he said.

software and business problem" ANTW approach to query proceswhen designing a Distributed Database Management System

DRMS

Software and designess process
with the requirement of a more
stringent initial analysis and the
extra step of determining where
introduced and designing and the
extra step of determining where
introduced and designing and the
extra step of determining where
introduced and designing and the
extra step of determining where
introduced and designing and the
extra step of determining where
introduced and designing and the
extra step of determining where
introduced and designing and the
extra step of determining where
introduced and designing and the
extra step of determining where
introduced and designing and the
extra step of determining where
introduced and designing and the
extra step of determining where
introduced and designing and the
extra step of determining where
introduced and designing and the
extra step of determining where
introduced and designing and the
extra step of determining where
introduced and designing and the
extra step of determining where
introduced and designing and the
extra step of determining where
introduced and designing and the
extra step of determining where
introduced and designing and the
introduced and designing and des

He noted that while the first system was better handled cen-

would be for 5,000 not 50,000 it

disc to main memory and equipment at every location. Remark a saluable potential for more sites might have unique remarks and a different pattern of growth and it was essential to visit all locations when designing the database regularity.



Local Networks & Distributed Office Systems

International Conference

11-13 May 1981 London

The first major forum in Europe to investigate the development of local computer networks es the backbone of distributed office systems. It brings together e group of the world's leading experts in this new and exciting field.

The event comprises two separate bul related conferences.

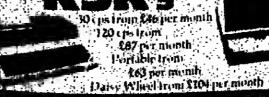
Strategic Overview

organisations.

A concise review for senior executives which will enable them to assess the potential of local

Return to: Online Conferences Ltd.; Argyle House, Northwood Hills, Middlesex, HA6 l'TS, UK. CW Phone: Northwood (99274) 28211 Int'l phone: 44 9274 28211 Telex: 923498

Please send me the 18 nage brookure describing the local Networks Conference



120 cm from

£87 per month

Portable trom 163 per memili

APL from \$47 per month; VT52 and other options trum £47 per month.

SHORT TERM RENTALS ALSO AVAILABLE

Specialists in the renting of terminals

Contact Mike Brooke or Philip Ely., Tel: 07535 55211

Integral terminals from £87 per month

THEND . QUME . DIABLO . LEAR SIEGLER . TALLY . PERICOM . TECHTRAN

KODAK Microfilm

Not a filing system.

fi happens at a lot of companies.

The computer gets burdened with more and more trivial information from everyday

Invoices, delivery notes, employee

Until it becomes little more than an

With a little help from the computer

automatic filing system answering queries

Kodak has an alternative.

IIs called the KODAK IMT.

Its quitesimply a microfilm

reader that, when linked to a computer,

vill relieve it of all the "paperwork" it

carractually give you a copy of any

And most important, it saves on

npliter free for more complex work

Unlike previous COM

If your company uses microfilm you should find out more about these latest developments from

We'll trake sure you're running a commune

expensive computer storage leaving the

The KODAK Komstar Microimage Processor is another highly advanced

computer peripheral.

Linked to your computer it will

set ups it is completely dry there are no chemicals whatsoever involved.

Start by filling in the coppon-

antually produce print-out on microfilm.

document you need in seconds.

Microinnige Terminal IES.

records and suchlike.

Th Plant Bellfunker, Rodak Timited, Merographic Sales, RO. Box 66, Hernel Hempsteat, Beng RPL 101.

[Ref: Hexpel Hempstead (0442) 6122. 也是是可以自然的。

Comingine is an intelligent sign and communication of system that the limited to display and communication of the communication of the communications equipment. It was drawing to proceed the communication of the communi

easier data storage....

more effective

Communication

Money not bytes must dictate how future develops

ter pace with events.

"WE should be using proven techniques, rather than what designing distributed database systems," according to CACI Interontiqual group manager Terry Wilcox in his address.

Moreuver, systems design, should be carried out in maney, not hytes, so that the user was fully aware of the cost of added system

flie approach in a distributed datahase system was "just another

Inadequate separation of staff responsibilities had been the major cause of failure in distributed datahave systems. Management of the

Date network transmis- they were properly organise remote locations could It was usually a mistake to put

ine system.

"Data does not want to be distriocal processing as possible buted," Wilcox concluded, "but distributed detabase so as to will be when it is cost-effective to

SPACCAPIBTRA ... 'As much

Technical Conference A programme of technical presentations and discussions examining the status of research and development on both sides of networks within their

DIGITAL . ANDERSON JACOBSON . TRANSDATA . AMJACQUARD . MELLORDATA . NEWBURY LABORATORIES . TEXAS Separate D/T Cassette units from \$43 per month Separate Diskette units from £60 per month.



The Apple II, which comes with a choice of 8K or 16K memory.

Apple makes bid to secure its CTL pours more cash place in US education market into sales, marketing

major market for the Apple II in the US, and the increasing amount of software is ancourant of software is ancourant of software is ancourant of software in ancourant of s of software is encouraging Apple o think that It can atrengthen its position and keep out the Japa-

Some 19 major US publishing houses have entered, or are about to enter, the software for education field, which has led the general manager of the education division of Apple Computer in California, Gregory Smith, to believe that the company can remain powerful in

The one thing which could let the Japanese In, says Smith, is if they emerge with Apple-compauble machines, although this does not seem to be their policy yet, he

"Every month the Japanese stay out of the microcomputer education market, the more accure Apple gets," said Smitb. He added

In a recent Creative Strategies aurvey of education microcomputers in the US Apple came out top in sales shipments, baving the highest percentage of the marker.

Tandy, or Radio Shack in the US, came top in unit sales while Commodore took most of the remainder of the market in either case. In total the three companies account for 85% of the market, However, the survey predicted

that the present potential market will be saturated by 1987, given the current growth rate. Smith's reply to this was that the limit in the US is a long way off, and as yet only 13% of schools in the US bave microcomputer. Business schools alone plan to have a microcomputer for each pupil eventually. According to the survey, it is

likely that the number of potential

tions and the expanilling use nf

About 25% of Apple's total soles have been to education and this represents about 200,000 units. Smith thinks that this proportion will stay the same over the next year, but then decline steadily over further years. The response in education has

been much greater than Apple anucipated, according to Smith. Schools that bought one system in 1978 bought another four or five the following year and another 30 the next, and this has been a normal pattern, Smith told CW.

A CASSETTE storage system which has the reliability, convenience and ease of use of a disc

storage system has been developed

for the Nascom microcomputer by two computer hobbyists in Cupar, Scotland.

Mike Hendry, a doctur and Maurice Shepherd, a lecturer in

ehemlatry, both own Nescons systems, and decided there was a

nsrket for auch a device. The key

to their concept is an operating system which is similar to a disc

When used with the cassette

drives, it allows the digital tapea to behave like discs, giving them the reliability and convenience of discs without the expense. However, the

speed is the same as that of cas-sette, which is slower than disc apeed,

Their system uses Philips mini-cassettes which measure about one lach by two inches and run for 90

Most of the sales (usually of Apple Ils) go to high schools for pupils between the ages of 12 and 18. However, there are no discount achemes for schools in the US, as there are in the UK from

Cassette storage with

developed for Nascom

disc-like features

Apple distributor Microscog Computers of Hemel Hempsel

A computer literacy parties offered for first-time buyer is education including Resignation education Including Basic more for the class, programmier concepts and teacher training materiols. The package, gives in of charge, is worth \$500.

rate of 6,000 characters per sensi synchronous, which is equivalent to 7,500 characters per sensi asynchronous, In blocks of 2K

similar to a disc system. One block

la a directory and keeps track d

For about £299 for a deed

drive aystem, the novel some method is available from a computer company in Edinburgh calc. Computer Interfacing and Equipment. Director of the comput Mike Anthony spotted the system when it was demonstrated at a computer computer of the system.

monthly meeting of the Scotts
Amateur Computer Society

Shepherd told Compile?
Weekly that Nascom had bear, proached with the device, in there had been no response to cause of the confused state of its.

cause of the conjusce state company at the time: Peter Mis-thews, director of Allteck Ton-nology Initiatives, announced I takeover of Nascom is No-vember, after it had been in its

Although Matthews will terested in the device, his daily take over Nascom fell through and the interest, was not followed in Now, receivers W. H. Cork Only have another buyer lined to the should be announced in a winter

filea, tape numbers and block

For the future, Apple is looked to industrial and military station with a Pilot-based language.

The company has enhanced fine proover of £7.4 million. CTL is the Hemel Hempsteadbased minicomputer manufacturer which forms the operating past of Information Technology Ltd, by adding colour graphics capit ties and character geotisten. According to Smith, this make is ITL, whose other two arms are Office Technology Ltd, OTL, and Network Technology Ltd, NTL. not as big as the traditional the Neither of these two is yet trading, tion market, but it is more some mough sales are expected to begin in the financial year just started. as there is always money to mis Finch notes that CTL'a trading

The complete microcompani in education market is predicted formance is not exceptional be worth \$350 million a yer b but says that some deliveries have 1985, and is expected to seeme been held back to bring them into puter market, according to Cas-He adds that the company has a

have very good customer satis- and specialised systems houses, It

parted by Computer Technology with about f. Ltd, CTL, for the year ended last and no loans.

Sunday, April 5, says managing director Robert Finch.

The company expects turnover to be around £8.6 million. The

year ended April 5, 1980 showed profits before tax of £581,000 on a

rice president Carlo de Benedetti, to whom most of the recovery has been attributed, announced that holding company profit doubled from \$24 million in 1979, to \$48

million last year.
De Benedettl, who joined the comyear by 22% to 1,102 billion lire.

duced the massive debts it raised during the loss-making years by

company's May Annual General Meeting to approve a bond and share saving eapltal raising opera-tion of 180.5 billion lire.

Olivetti recovers to double its profits

OLIVETTI, the once stricken Ita-lian computer manufacturer, has announced substantially improved year and results for 1980. Olivetti's billion lire of medium-term pool

pany three years ago as chairman, brought in the French St Gobian Post, a Mousson group, as a source of capital. He also invested substantial capital of his own, and best brought the company from losses which began in 1975 and continued through to 1978, to its present state, with turnover up last

TURNOVER up about 16% on 1979-80 with profits "something fetter than last year" will be remoted by Computer Technology with about £100,000 in the bank faction," he claims, "what we've got to do is increase sales aggression."

He does not expect the number

But Finch emphasies that there

has been profit improvement.

"We've been forgoing profits," he saya, "but we mustn't have a profit

dip. We've had six years of profit

growth that was very hard won, and we mustn't let it dip back."

significant extra investment in

sales and marketing, he adds. His-

torically the company has operated

on a sales force comprising about

eight per cent of total employees

but this was 11% last year and will

be raised to 15% in the current

year. For 1982-83 be plans to in-

crease to 20% which will, be says,

put the company on a par with similar US manufacturers. Finch cites the traditional weak-

ness of British business - good at

making, poor at selliog - as back-

ground to his commitment to boost the marketing effort. "We

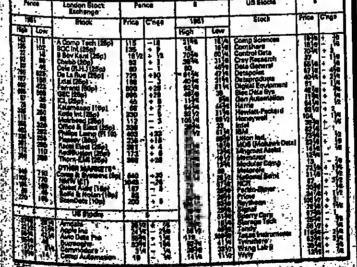
The year just started will see a

In addition, the company re

De Benedettl revealed that

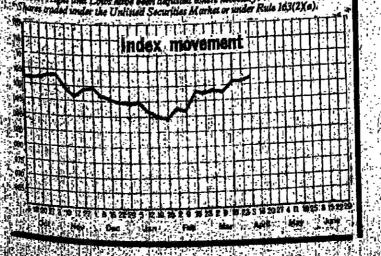
This new capital is understoo to be needed to enable the com pany to continue its acquisition policy in the US where it has reeently been buying small high technology companies.

CW SHARES TABLE



The table shows the closing prices in America on Thursday and the inid-day prices on Prices of London. The share index is based on the prices of the UK companies in the lable. Highe and Lower have been adjusted where necessary.

Shares craded under the Unitsed Socurities Market or under Rule 163(2Xa).



Alarm bells ring at **Data General** US mini-maker Data General has reported a sharp profit drop in its

nent in the near future.

adversely affected by the infla-

onary pressures of wages and

He does not expect the number

of employees to rise significantly, bowever. CTL currently has 373

people, only nine up on a year ago. About 150 of them are field service

three minicomputer systems - the 8026, 8046 and 8066 - with an

entry level price of about £50,000.

Currently a third of sales come from OBMs, but this is concen-

trated in two key customers. One is ICL, to which CTL last year sold I million of front end proces-

aors, and the other is the European

million in revenue last yesr.

materials costs, by costs of litiga-tion, and by the stretch of the US dollar in relation to European cur-To offset its increasing costs, the large OEMs like Logica, Data Logic, Leasco, Scicon and SPL. Groarke intends to push CTL at ompany raised prices on most of its computer products by about 5% on March 18 and has reduced and expects to sign general quarter to 14,270, despite an incontracts with three soon. His tarcrease of 200 salea, systems engineering and service staff.

Excluding extraordinary earnget is £1 million of revenue this year, growing eventually to around 30% of CTL total business. ings, net second quarter profits were \$8.8 million or 83 cents per

Space Agency, which uses CTL machines for satellite testing and Aiding the sales drive is the brought the company about £0.5 ronment 8000 (ICE 8000). This is the OBM: end user ratio to nearer 50:50, says Pat Groarke, responsiproduct using the Class high-level ble for sales to major systema language to allow users to write their own protecols to link compuhouses. Though the company has built up good contacts with small

According to Data General, second quarter, and according to president Edson D. de Castro there is little sign of any improvemost of the strength in orders continues to come from its larger systems, notably its MV/8000 32-bit mini (the first UK installation of which was announced a couple "Our profit margins continue to

> About a third of DG's current sales come from Europe.

of weeks ago) while demand for smaller products continues to be

Intel-Matra deal

AGREEMENT has been reached between Iotel and Matra of France on a joint venture research company which will give the latter access to Intel's NMOS technology circuits. Intel gets direct access to the French market for its US exports. The venture is awaiting French government approval.

share, compared with \$12.7 million or \$1.21 per share for the second period of 1980. Kevin Cahill's short series has been Turoover for the quarter advanced from \$146.7 million in concluded. He is currently finding out how companies which went looking for money have fared, and will report 1980 to \$162.1 million this year, service and other revenues inback in a few weeks. creasing 44% from \$23.5 million to

A message to all systems engineers

Multicore is yesterday

Videodata is tomorrow

Are you a systems engineer, designer or menufacturer faced with the problem of designing or operating a multiple data communications network for a large industrial or commercial complex? If so, 3M Interactive Systems could spare you the problems of multicore communications. Multicore not the answer

Everyone is familiar with headaches that conventional twisted-pair, point-to-point wiring can give. It's expensive to install. Difficult to service. And very costly to re-route or add on to. You get to the point where operating systems have to conform to wiring plans, instead of the other way round. Which is silly, given that there is an



The coaxial siternative For years, engineers have been using coalital cable to transmit multiple high frequency radio

Now, 3M have taken this broadband coaxial concept and adapted it for large in plant data communications networks. The system is called Videodata, and it offers a reliable, economical and proven alternative to twisted pair wiring.

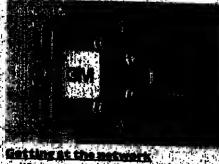
Videodata - One cable for everything

instead of using dadicated paired-wires for each circuit, a Videodata network la designed around a single, broadband ½ inch coaxial cable.

This modest-looking object is capable of carrying, simultaneously, up to 20 video channels and several thousand 2-way date channels.

Think of it. One cable for all your data, point-topoint speech and vision transmission. And the signals ere lotally 'clean', shielded from outside interference and physical disruption by the cable's aluminium jacket.

Which is not the only benefit this sturdy construction can give you. Ultimately, it means you can forget about conduits and ducting



Whenever and wherever you need to tap into the Videodeta network, it's a matter of minutes to slot in a heavy-duty tap. Think of the flexibility.

You can move terminals or whole departments around. You can add on extra computer systems and expand or re-site existing systems. You can even tap in the emerging Local Area Networks.

All without dislocating the entire plant, and at a fraction of the cost of re-laying a dedicated paired-

cables end taps. To provide the essential interface between equipment and communications systems, 3M designs and builds a complete line of broadband Moderns, to interface terminals and computers to the cable.

Videodata - How you can benefit Videodata is the most up-to-date

Moderns to match Of course, there is more to Videodata than just

communication system around today, giving a unique competitive edge to the systems designer

CONTRACTOR OF THE SECOND

3M has the experience and marketing know

JM nas the experience and marketing how to help you plan, sell and expand your customers. Videodata networks.
Look into tohiorrow's system. Today.
Call Milde Bellamy at Interactive Systems.
JM Uhited Kingdom Limited, JM House, P.C. Box 1, Bracknell, Berks, RGI2 19.1.
Telephone: Bracknell (0344) 58301.

seconds holding 64K of deta on each of the two tracks. The input and output is controlled by a Z80 serial I/O chip which is housed on an interface board that connects up to the New House

The operating system is stored in 2K of EPROM which fits on to one of the Nascom II boards, along with 2K of RAM memory as work space. The two mini cassette drives interface with the Nascom by ribbon cable.

Cash-and-carry micros

KETTERING-based computer company HB Computers is forming an associate company called

ing an associate company called Computer Supermarker to cope with the hobbyist and educational microcomputer market. It will be based in Corby.

Alike Hambly, joint managing director of HR Computers with Cotin Stanley, is giving up this position to become managing director of the new company.

HB Computers has only recently expanded, with the acquisition of languaged, with the acquisition of languaged Computers of Luton last November. This she, together with the Kettering base, will capitate selling micros to the business and professional market.

Hambly is convinced that there it asseed for a cash and carry style operation in the company field;

particularly in the hobbyis and trobbyists are likely to beath a carry out basic servicing of the equipment and will need part an accessories to do it.

equipment and accessories to do it.

His Computers has been its hing a cash-and-carry operation parallel with its normal markets, procedure for some time, but a procedure for some time, but a conflict of interests arose with its conflict of service offered by each type of service offered by each type of service offered by each type of services offered by each type of services offering and the services, hardware and some training and support services are training and support services. ware training and support says

to their customers.

The new alpermarket yill lain ally be situated in temorif ally be situated in temorif accommodation provided by the second all the situated development of them is industrial development.

Disk packs from Control Dataset. Because you can't choose better than the world's biggest brand.

The Control Data label on a disk pack reflects its maker's system/drive/head/media total technology capability. Control Data is the world's largest supplier of scientific and

engineering computer systems. The leading supplier of OEM peripherals, particularly of disk drives. The biggest manufacturer of disk packs and cartridges. With large-scale U.K. manufacturing facilities, for full quality control and maximum availability.

For exclusive supplies of CDC and ICL label magnetic media

contact Control Dataset. You'll gain the services of Britain's most extensive and experienced sales and technical

You can't choose more wisely than the biggest names in disk packs and cartridges, from the U.K. Industry's largest

Call Control Dataset on 0438 3399, today, or write to Control Dataset Limited, P.O. Box 16, Argyle Way, Stevenage, Herts SG1 2AB.

CONTROL DATASET CONTROL DATA



A dream of automated system and software architecture

Most of it is still a dream. I am sitting at the console of my personal computer, which in this case I am guing to use for system srchitecture help. As I pull the joystick controlling the "reliability" attribute upwards, a red co-lumn inches (or does it millimetre) slowly upward in the direction of the unattainable "perfect religibility". As the red reliability attribute nercases, the computer searches its technique/attribute handbook to find appropriate design techni-

This means it is looking for techniques for all levels of the system, programs, data elements, databases and hardware perhaps even human organisational jactics - which are known to produce the required levels of re-liability. As it finds them it includes them in the design, outomatically replacing less reliable decisions made n few seconda ear-

It amomatically computes the total multi-dimensional effects (portability, maintainability, user friendliness, performance, etc) and makes sure these are within the boundaries I have set.

Then it dynamically draws a blue line indicating increasing levels of investment, and a plak line indicating increased levels of perational cost. I see the blue and pink cost lines on the yellow background approaching my planned (budgeted) level and I hear a warning bleep as the cost passes one of the lines.

I keep pressing the reliability bar higher and higher. I have not exceeded my "worst case" cost criteria, and i can't wait to see where this ends. I notice that the reliability demand bar only scema to be moving at a snail's pace, while the cost bars are shooting speedily for-

I have obviously reached the point of diminishing return on investment, and I cautiously back off my reliability joystick to the point indicated as optional by a

Part of the dream exists already. for printout key, I get the details of the design specifications, together with cost and effort estimates, as well as estimates of uncertainty of

the computer's own estimotes.

inspection meeting deadline today.

I grab the design speca output diskette as I leave, so I can recap-

this is the part of my dream that does not yet exist. But, we are hard at work making it come true.

evolutionary stages of automated Design by Objectives oo the air. In December I could demonstrate the lumn is printed I will have demonstrated (if the hardware

but not s necessity) and will wholeheartedly on sitsining.

I am a bit astonished to see that the design spec includes triple redundant distinct software, and that my favourite database management software has been eliminated in relation to my own suggestions for a departure design. But I know, from sceptical experience, that the automatic design system is as correct as I will ever be, and I have to meet the design

ture the detail and dynamics of the design process for the inspection group if they want to look at alterves during their post-inspec-Unfortunately (put away your chequebooks and stop drooling),

que selection algorithms), this is oot vet done. Last year my colleague Lech Krzanik, of University of Krakow, of as a very structured text editor, specialised in the area of systems put in the hard work of program-ming and doing most of the de-tailed design needed to get the first design. We can, with single key-otrokes, jump up and down a design hierarchy, or retrieve the documeotation area which corresponds to a list of places that

system in Tokyo (and we have people from there who want to participate in the project, as well as people from major manufacturers in the US). By the time this coappears on site) the system to the Software Engineering Conference in San Diego, ot the Tools Pair.

There are a number of attempts ot automating "aofiware design". These all seem to stop at the leve of documenting the logic and perbaps the modular structure. Or perhaps they are merely high level algorithmic program generators pretending they are "design"



Tom Gilb is an independent consultant, lecturer and author on

But there remains a lot of hard reative work to be done before my dream is there. Any resders who are prepared to share in some of sbsre with us what we have of UCSD Pascal on Apple and shortly on Cyber).

As progress is made, I shall be sappy to share more with readers. don't know if the dream will ever function as well as an ingenious human designer. But the fun will be the journey itself. By the time we get there, we shall, we hope, have a new set of dreams.

construct a crude automated systems design system which is superior to the majority of human effort 10day, but inferior to the best design "maaters". By doing so we might get some teachable understanding of the mechanics of the design process itself. We need

Commons that the Pay-As-You

10 YEARS AGO From Computer Weekly of April 8, 1971

specified attributes of, for

example, cost, security, reliability,

portability or any other factor of

interest. I don't know of any othe

system which even has this ambi-

The present project is best char-

acterised as a research project without commercial ambitions.

We are trying to learn what is pos-

sible to automate, and where the limits to growth lie. What is up

and running is best characterised as the skeleton for the great leap

forward. We can apecify both auti

butes and design decisions

manually, and we have several of

the analysis tools in place. But,

although we are now prepared 10

lug in the experience (in the form

of technique/attribute tables) and

So the first stage is best thought

intelligence (in the form of techni-

ABOUT 250 employees in the machine shop at ICL's Croydon works are to lose their jobs on June I so a result of the continually reducing mechanical content of today's computers . The British Computer Society has registered a new company under the name British Informatics Society Ltd, for the

sole purpose of protecting the name 'British Informatics The tool we are developing will. Society". . . Nicholas Edwards, a . Conservative MP, told the

Earn computer systems were "costly and apparently not very officiant" but this was disputed by the Finoncial Secretary to the Treasury, Patrick Jenkin . . . The Medical School at Manchestar University hos taken delivory of an IBM 7090 and an IBM 1401. sold to it for a token aum . . . A Science Research Council grant of £314,986 has been mada for

Software scene looks like a micro rip-off

WITH the government keen to expand the use of microprocessors, the setting up of a micro centre by the setting up of a micro centre by user is timely. Unfortunately, the eentre will enneentrate more on urdware than software, an area which even the NCC has described 'patchy and poor"

Pately and poor are hardly the terms used by many business micro users whu discover, rather too late, that it is the software part of their micro enterprise which gives most concern. This is hardly surprising to the DP professional who views with alarm the relative attention given to the purchase of micro hardware compared to that of software. Misunderstanding un the part of the purchaser, misjudgment on the part of the software provider and misguidence from the vendor all contribute tu the general mistrust.

Unless the problem of suspect software packoges is tackled soon, the problem could escalate out of hand. The heal high street battle lines ore ofreody being drawn up, with Currys predicting o UK micro morket worth over £100 miltion, involving over 65,000 units - most of which opparently are destined for the business user. electronic gear as W. H. Smith and Boots are threetening to join the micro sales rush, especially now that Sincloir oppears determined tu conduct a one-man price slushing

It connut be long before micro hardware will be available as a give-away with each subscription taken out for "Yuur Personal Micro" or with each teach-yourself harmacy kit. The innre traditional electrical sector will counter with free inlerus with every villeo recorder sold, while the micro specialist shores will have Sylvin Kristel personally promoting their

What is certain is that suftwore packages will never be issued free with the hardware rations. While Acorn, Apple and Pet will be used as vendor loss-leaders, the demand for professionally produced microsoftware packages will be in

conragement from installation to ers, management or DP teams.

It does not take long for the DPM tu convince himself and is senior management and usen the the application requirements of the company are specific, select to highly singular. Such singular can only be met by the in-lose programming and systems tess.

Such traditional and integer denec is notably absent in the micro world where those involve are usually only too giad of thelping hand. The stand-line micro home habbyist is no entertion and many are keen to join its local micro club. For the micro centres are in short supply.

Only the IDPM has accepte
the micro challenge and former untional micro business use group, Micus. Otherwise getting help is about as likely as getting tickets for the Cup Final.

For the micro user, the software scene can often be described a micro rip-off. Standards, des mentation and guarantees are in short-supply as after-sales end no method of knowing whether is software package has been greete by a co-operative working from home or from a professional conpany specialising in micro software with full resources for evaluation

One solution is to hire tour tants to odvise the business use This advice could cost more than the complete system. Finding 1 nutional seal of approval sweet would be costly unless the government could be persuaded to diversione of the lavish funds being drughed into micro hardware de

Microsoftware users should no e exposed to the luck of the dist. Otherwise the drawbacks involved will end up as the expensive to ponsibility of the DP industry at

Alan Simpson

DOWNTIME Bugs in the system

menting on the doings of other computer journals and those who write for them, if only to avoid boring "dog-eat-dog" episodes. But Mr Tebbutt, quoted on the facing page in 1984, has so thrilled me with his revelations that I cannot restrain myself.

The Uxbridge and Hillingdon lieves that fliose in power regard

"knowledge of computers" such as how you delete single characters on CP/M. Remember that all you lot have my leaking roof or try to get on to British Rail to find the time of the next train to Hudderafield, there

this dangerous knowledge too, even if you are not in the exalted band of computer journalists. So watch out for the MI5 men on your taill Of course it seems these days the spooks ore, hanging on to my that virtually all MIS men are in I must also be in their datebank are actually doing in following us is a bit confusing to work our

knowledge of computers as very of subversives. No wonder they a hit confusing to work out.

I've been told that every confusional to the confusion of the confu



Way-out way in

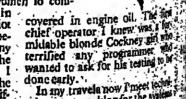
Focusing on a mere male

'MY friend Alan Simpson, whose words uf wisdom appear above, hasn't half brought down the wrath of the furies on himself for his remarks the other week about women io com-

I AM a little worried about the future of business efficiency in another ton of oewsprint to prior or Northern Ireland, John Frazer of all the letters. Whether he was being a sexist swinc in saying many women are not committed to the career. I can't say, But what I

men who mis-spent their youths

Presenting consenting adults on the census form...



cal women working for the system houses, word processing me turers, the British Library and h like, who have all the answell their finger tips in a refreshing Communications firm Car

Communications firm the well known for the number of women it uses; particularly on the technical side of marketing.

I was in Poland on a busies trip years ago with one of my natagers, and at one point out host commented on the 'stay in hour status of women in Britain, side status of women in Britain, side my leader (whose wile was a meliny leader (whose wile was a meliny) leader information scientist). On

ComputerWeekly

We should aim to recover UK lead

iT seems France wants to depurt frum its usual practice of going it alone, and is looking to speed up European agreement on standards for videotex - the generic term covering viewdata aod teletext.

The managing director of the French Post Office's tele communications authority, Gerard Théry, hos ealled on the Germans to ensure that their two countries seize what he describes as "the best trump cards". The initiative, Théry warned, must be kept out of the hands of the US and Japan.

British Telecom has already done its fair share of initiatng co-operation, most recently in satellite communications or business and in plans for linking digital networks designed to carry both voice and data - the so-called Integrated Services Digital Netwurk concept.

Until the 1960s, Britain was o pioneer in communications in all its forms, as well as the world's leading expurter uf telecommunications equipment. But we have now follen behind to such an extent that the expurt target fur System X s no more than 10% uf the world market.

London, however, remains a major switching centre for International traffic, and British Telecom soys it is committed to keeping it that woy. At a seminar for BT's international customers lost week, the man responsible fur marketing io this area, John Jeal, said he wos well aware that users could choose whether to route their traffic through

British Telecom comes with some good references. The main focus of Euronet, the EEC's pucket network, is London, where the management centre and inquiry service are run on behalf of the Commission. Britain's IPSS is the first international packet switched service.

Building foundations fur the future, British Telecom has re-arranged its moin international network round a modern witching centre at Mundial House, and international acrrices director Mike Morris has stressed that much of the effort made over the last year has gone intu improving the quality of its services.

The drawback to this tale of foresight and furture is BT's Inancial straitincket, preventing it from spending money now on both keeping up with the quality that international customers demand and pluncering data transmission ser-

Britain's telephone service is not of the best. The demand of lines in many areas far execeds uur antiquated exchange tetwork's ability to supply. Calls for generalised countercyclical investment in telecommunications have been made, d British Telecom's ability to borrow has been asserted.

Mrs Thatcher is even believed to favour letting up on her hancial squeeze enough to allow the breath of private cash blow on this state enterprise. When even the French start make noises about co-operation in the face of US and apanese attacks, it is time for the special field of data Iransmission to be given the support which allows Britain a ighting chance of getting back to the top of the telecommu-

Jargon problem

AST week in Hanover, Commodore launched itself at the general business market with a powerful micro in the Pet's ox which it dubbed a micromainframe.

Last April, Intel announced the world's first 32-bit, bree-thip set microprocessor; which was claimed to be as lowerful as an IBM 370 mainframe computer and which was dubbed ... micromainframe.

Before we all get in a tangle about terminology yet again. could someone decide what a micromainframe is? Pending hat, we at this newspaper shall remain sternly ignorant.

1984 and all that . . .

THIS week's example of the arrange things people say in the media about computers was seen in by A. J. Hillon of Uxbridge, who omputers can drive a wedge through a happy home and des

tmy a marriage.

I hat's the view of David Tabbutt, editor of Parsonal Computer
World.

Men should push for equality

SURELY Alsn Simpson's Fucus article (CW, March 26) misses the undamental point shout equality women to be equal, ment must also be equal. It is grossly unfair to criticise women for their concern over domestic affairs, or their reluctance to stay lste for ritual drinks. In most cases they need to do the 'Tesco branch subroutine," or rush home, because their husbands are doing the ritusl drinking, or would not dresm of using their lunch hour for a supermarket visit.

Working women frequently do most of the household work (shopping, cooking, elesning,

IT IS difficult to refute Alan Simp-son's arguments, not because I feel they are justified, but because they suffer from the weaknesses so of-

ten attributed to women; illogical-

ity, Incoherence and concentration

on the particular - keep-fit classes and laundromats, indeed! Instead,

let me suggest some of the root

causes why women do not flourish

higher up the computing tree.
Society in the UK still revolves

the woman's job to run the home

ond a mother's duty to devote her

time to bringing up her children. If Simpson or his ilk considered

working wife/girlfriend in organis-ing the evening meal, their after-work drinking companions would

I HAD hoped that by oow the DP industry had realised that men and

women are equally intelligent beings, but it would appear that the

sinies, increasing numbers of

women are enrolling on computer

old argument still lingers on.

washingt all of which are regular if it is normal and necessary for men above ritual drinks after work: not daily tasks. These are usually to work beyind usual hours, espetible right to get straight home from nut balanced by less regular mus-culine preserves such as DIY and cerned. Di course one expects the car maintenance, especially when \ occasional entergency or the lastthese are confined to weekends. For women to be "equal" they

man, have a liherated husband or stay single. I have worked with dedicated wumen cumputing pro-fessionsls who exemplify each ut these three opproaches, and none nf whom were less valuable at work for being female. Equally, as a man whu would

than pay lip-service to these prin-ciples, I resent the implication that

Caught in a vicious circle

lt is practically unknown for

employers to offer nursery facili-

ties for the children of stoff, even

when those staff, such as teachers

and nurses, are essential to the wellbeing of the society they serve.

Companies therefore see the hiring

of a woman as carrying the risk

that she will leave for domestic

likely to find themselves a

minority group in any area of work

where an unbroken coreer is de-

groups, the effort needed to advance is often greater than for

members of the majority: they

The old argument goes on

essential that such students receive

management, and its associated responsibilities.

to ensure that its employees carry

irrespective of whether these em-

out their various tasks correctly -

It is then up to the DP Industry

a sound instruction in all aspects of

evidence of hen-pecking.

cially where ritual drinking is con- work if my wife has to work late week panie hefore a new system is implemented. That is the name of the game. Anything more than that is, in my bitter 3 months of 60-hour-week experience, due to poor scheduling, lack of project control, insufficient allocation of

As an spplicant to join the humsn race I expect: rhe right 10 see my children seven days a week, not two;

them if they fail! That failure is

why, of course, they are a minority

There is no easy way out of this

the problem, but at least they

ricious circle, which perhaps ex-

plains why separatist all-lemale

groups are beginning to burgeon. I

allow a number of people to bene-fit from wider experience and

greater responsibility than they

may be accorded in a conventional

mon who doesn't want a wuman

too intelligent and who thinks that

all women (except his punch operators) should be at home

minding the children. Thankfully, this breed of DPM will eventually

computing environmen

Amieus Systems Ltd,

and deserve to remain so in the

resources and rank bad manage-

Perhaps we should start pushing

For equality to be schicved

men must change too. Simpson implies the need for women to

sdspi to pid-style, predominantly

msle-oriented work patterns it

order to open doors. Perhans w

men should stop leaning agains

inside or standing idly by

s child is sick.

Infuriating

AS A consultant systems analyst having worked in the Dl' profes sion for 10 years, I have, alas, not the in-depth knowledge that Alan Simpson displays, But then I don't qualify for incan-minded juurna ism either.

I am surprised, Mr Editor, that ingly bigored article to be pub-ished. you could allow such an infuris-Perhaps you missed it in the edi-

torial stage - had to rush out and do the week's shopping - or had in get home to do the bing overdue washing and ironing — or jost cleaning, etc., etc.
D. SHILL (MISS)

No energy

THE reality is that most women are not in a position to apply them-selves so single-mindedly to their obs because, even in these enlightened dars, women still shoulder the main responsibility for household work and child-rearing. Until more men take responsi-bility for these areas of their lives most ivonien will never have the time or energy to climb the promo

courses. Those students who are successful in obtaining diplomas and degrees in computing deserve an equal chance of climbing the ployees are male of female. It is the attitude of the "old-type" male chauvinist DPM which Not much chance of promotion

become extinct.

LAN Simpson concedes that "doors will have to be opened for women in computing" - yet at the same time he attempts to close them, by perpetuating the myth that women always put domestic obligations before their occupa-

We can obviously only write from our own experience, that of a handful of women programmers in ming department. None of us ever feel the need or desire to interrupt our work and suddenly rush off to do the washing, queue at the supermarkets, etc. Why should we? Supermarkets often stay open late,

as do launderettes. Boy friends and the women programmers in our company stand little chance of promotion at the same rate as their

Although we are not averse to lunchtime visits to the pub (far from i1), in comparison with our male colleagues, nur lunchume are considerably shorter. Surel ours is not the only departmen where men leave early to collect 'cars, decorate, meet girlfriend

From reading this, a great man males might smile and say; "So what are they getting so annoyed about?" Uniforminately, the prob-lem remains the same. At present

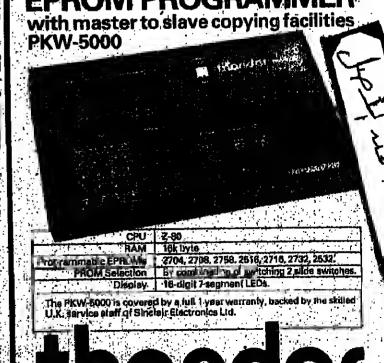
Liveware File

WHICH IS AN I PREFER A ALL-WOMAN ONE. NIGHT SHIFT ... 91 SE SE NOT ONLY IS THE THERE ARE NO DIRTY DIMES LEFT FOR THE WORK ZONE PERFECTLY

male counterparts. However much women's actions bebe the cliches and myths, these attitudes, as expressed by

as long as people like him expound them.
J. BARRETT, ZULDA SILVER JULIE BELL, JANET

EPROM PROGRAMMER



London Road, St. Ives, Huntingdon, Cambs. PE17 4HJ, England

PVE been trying to resign the urige problems on data entry of auch to congratulate the designess of the delights as "saggermaker's bottom for managing to make an eight-page folder appear as difficult to fill in as they did. And J volumer a place of work if you were a place. What really was executivities in which are the same roof shall manually struggle to do so.

The people who cannot be exempt from the order of the same roof dumb terminals however, are those that is.] If you were not it lasted to be classification really in the guestions. Let's leave aside the classification cannot be intered. For examples to be intered, there we expected to say? If the mod man or whomian who order a place?

What really was exerticating is you she way lies treation that is present the same roof dumb terminals however, are those that is.] If you were not it leave to the classification cannot be intered. For examples to be? Cohabitee? Sounds, soo Garles and Da up the angle (Now Ser Sharing Laring Quarters). o protect the innocent was left with helps me with the housework yes that means Person of Opposite joke.

Ser Sharing Living Quarters. omputer porkers have the highest rate of divorce," he says "You can actually fall in love with a computer, they are phonomenally powerful machines and they obey you utterly." I when a computer man comes home he expects the same latelities in from the family as from his beloved allicone city that 8 Tel: St. Ives (0480) 64646.

PROGRAMMERS PAGE Blindness and reduced vision are no problems for keen programmers

WOULD you employ a blind pro-grammer? The first reaction must "If e concero about the formidable practical difficulties of reading specifications, writing codiogs, checking printed output and so on.

But new technology has transformed the blind person's prospects and many companies are tak-ing the plunge — and coming back

As Roy Chitty, Data Processing Officer of the Royal National Institute of the Blind, ssys, "we are not just competent programmers."

The courses he runs are hard

and intensive. "We're not looking for charity," Chiltty said. "If my students ean't cope with the

"By the end of their ten weeks they will have written approximately 40 programs, 20 in Cobol and 20 in Assembler. They can a 20 in Assemble and 20 start a new job at 9.00 on a Mon-

largely trial and error, organised in equivalents and reproduced by a sponse to requests from members. It centred on eight students an official TOPS course.

The support that he gives to his mastered.

phones, and above all, talks to any

"If they are invited for interview, then I go along to have a preliminary talk about the probems and the solutions.

"lt's mostly a matter of informing, and allaying their fears.

Many people really know lirile of the capabilities of the blind now." Chitty also puts employers'

minds at rest conceroing the special equipment a blind pro-grammer might need. The Man-power Services Commission, under the Special Aids to Employment scheme, provides a range of help depending on the degree of sight loss, and free of charge to the employer.

students can't cope with the course, they won't succeed outside.

"By the and of their terminal, a pocket memo recorder,

would also receive an Optacon system, a US device which has 9.30."
Roy Chitty has been running programming courses for the RNIB since 1974.
The first course

Visual images are converted by a The first course in 1974 was small electronic pack to tactile series of vibrating rods on a small

an official TOPS course.

Since then, around 70 partially and totally blind students have survived the course — and Roy Chitty bas found jobs for all but the found for the last course in the last course in the last course in the last course is the last course in the last course statement, book or bill once it is

graduating studeots is total. As cach course finishes he visits, telepective employers, When I went along to the encourage the students to elegant old Georgian house in Lonmal working from the terminal. . write to all possible companies in don that now contains the Com-their area, and to answer advertise-

ANADEX DP8000/9500/9000

Exceptional value and high reliability
44 fires per minute, 112 cps. Parallel and
settal interfeces as attandard, 86 ASC11 set.
9 x 7 font. Variable tractor. Forms
handling facilities. 11 buffer store. Options
include 2X extra littore (EEE interface)

30 tips desk top terminal, Roll feed, paper viditis from 3-14 inches. EtA interface 4 selectable character widths. Full 96 ASC; 1 character sel. 7.43 dot matrix. Options include a 20mA interface; treators le accept aprochat, leed daper and numerio keypad.

LEAR SIEGLER 310

EAR SIEGLER ADMISA

CEAPHICS TERMINA

DIGITAL LA34

from only £494

two partially sighted out of the maximum of six students that Roy

The selection is pretty rigorous.

A good educational background of
A-levels or preferably a degree is
looked for, theo a score of at least 70% in tests on Braille teading and writing, typing, and programming

Roughly 40 per cent of students already have a first degree in some

discipline.
There are also the occasional sponsored studeots sent by their employers to be trained. For them, course is necessarily much more variable, depending on their strengths and weaknesses.

Three courses per year arc held, in January, July and the autumn; and there is always a waiting list

Mark Hebbs was one of the four current students I interviewed. He aeries of vibrating roos on a small 1" by I's screen. This is felt by the index finger of the other hand.

Although it takes a little time to adjust and work up an equivalent working voluntarily, from 8.30 in the manifest to 10.20 at high in is 19 years old, almost totally blind working voluntarily, from 8.30 in the morning to 10.30 at night, in order to keep up.

All the programs are recorded on floppies and sent out to a self working on Saturdays." bureau service for running, which

lob somewhere within reach of his

some measure of sight; s more re-

terview in which personality and the ability to communicate well with a variety of people is assessed.

for vacancies,



Optocon converts visual images into tactile equivalents

others, whose main priority is to get a job in DP. Kelth Williamson, Dale Cooper and Peter Davey have only a partial loss of sight.

Kelth took a BSc in electronic engineering at Aston, and it was only during his degree course that his sight began to fail. He pointed out that careers open

to the visually handicapped are strictly limited, so he was in-terested when the RNIB careers adviser suggested programming.
"Otherwise it might have been manual labour or audio typing." Keith applied for a place about a

seems to work well.

Mark attended Worcester College from 1974-80, leaving with six O-levels and his current alm is a Peter Davey has a BSc in chem-

> . when you need a dependable supplier, an authorised distributor with a comprehensive range of products at keen prices, backed by large stocks for fast delivery, with full after-sales support. We promise you a rapid response.

> > from only £795

from only £850

From only £695

LEAR SIEGLER ADM:31

LEAR SIEGLER ADM-42

Semi-intelligent VDU with up to 8 pages of display. Full editing features, binking, binking, cursor addressing, former transmission, postocial fletts, dual interest, expanse function keys, shahas laptay. Optional alternative characteristics.

TYPEWRITER TERMINAL

Two mectanes for the price of one: Type-muster shife incided lead for single. Occanness, leaders led. This leads for contra-locus humans sections? Electric typewriter services all leaders sections? Electric typewriter services and leaders. Left and right hand recepts seeting. Catep, high quality privators.

TECHTRAN 950

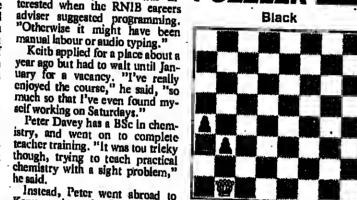
home in Berkhamsted.

This theme is echoed by the Instead, Peter went abroad to Kenya and taught O-level maths

and biology, but found when he returned that he lacked the specific training to teach them in England.

He had brushed with computing at university as a subsidiary subject and learned PL/I, then applied for a place on the course. He,

too, enjoyed the latter part best. If that doesn't materialise, he **PUZZLER**



lowing a Black pawn capture at N3 — or Black might just have played Pawn to R5 or N5.) Either way, one of the Black Pawns off the board, replace it with a White one and then rearrange the six pieces

"There was a lot of work in the Roy had to go any, the made sure he left us plenty in the gots results, though - kill work forceful character.

very forceful character, we die

The fourth student, by Cooper, agreed. He'd took hooked on computing when he taken a CSE at Worceser Observed it was with the

and followed it up with the

levels, in economics and corne

for a programming job, but in the RNIB suggested this corri-jumped at it," Dale explained.

All the students live and set

the College for their 10 week, at have found communal life nate

enjoyable. Now they are looking formula

the next stage of putting all is work into practice, and then i

one aspect of instutute life he

"Living here, they keep migri close eye on you - It's one of it

pressures," was the gener

"I push them," admitted by Chitty. "But I have a pet knowledge of the industry, ad a I know what to prepare them to.

"I can boast that 95 per con a

my students are promoted with two years, and as the find prof.

many employers who have take

one student are coming back to the

IN THIS peculiar chess ponin

(White might just have played king back frm QB2 to QNI, it

where both sides are in statement, and one cannot tell whose more? is. See page 39 for solution.

for another.

won't be sorry to leave.

"For a while after that I won

Chimbers, says: "We are going for hilled personnel with at least one Mparikular interest to ops is a serie editled IBM/MVS JCL Utilities. It is being given on occasions and lasts five days

in Norway and Sweden. These tourse covered VM, MVS and IS2 internals plus MVS debug-ing and ICL.

has just started a UK pru-grame of four public courses fur MVS users which are suitable fur

mich and operations stuff. One in Systell directors, Frank

bers, "we sub-contract people. I is changing so quickly that lecturers must be using it all the time." Grinding

uther courses are MVS debugging and testing, SRM tuning/MVS performance and MVS internals.

There are plans fur a further 3

courses, starting with another set of faur for opa covering VM. Chambers says that Systell is prepared to cover appeared to a cover operator training

There are obvious problems i

sticking with the clever stuff, not least of which is finding the right lecturers. "I'm VM," says Cham-

both true and short, the

Fink Chambers reckons that the operator training demand is for people with almost year's experience. He lectures on MVS JCL.

New name comes up

A NAME to look out for in from April 27 and Juoe 8 respecti-miling is Systell, from Fisckwell vely.

The cost is £345, which does not

Formed last May as an MVS cover accommodation. The course

system programming consultancy, will be held at a West London fruit its training teeth by the end bureau which has a 3032 running at the summer with on-site courses trader VM and MVS. The three

on training scene

The Office of Population Cenin Tachfeld which, due to the notivetsial nature of the applica-The last line of defence against

's a dog's

territy so comings and goings to be computer room are monitored adcontrolled: s: several levels of

mential floes is a Mastiff security

out that much to feed a dog."

to a halt CANADIAN computer workers are finding their working lives are grind. A recent survey of 2,700 of them discovered that two-thirds wanted to change jobs before they

But why? Well, 24% said their jobs had no potential and 30% said they would find it physically diffi-

If we are to believe the survey, une out of four Canadians in DP is a dissatisfied, sneezing, myopic wreck - 45% of respondents reported their "visual power wea kened", 33% suffered headache and felt stiff to the shoulders, and 27% caught more colds.

Some respondents reported that they put in over 220 hours overtime a month. Now that is enough to send anyone round the enough to send anyone round the

KILLINGBECK HOSPITAL

ENDERS are invited for the supply of minicomputer supply of minicomputer

operational requirement can be obtained from: G. D. Unsworth, Principal Physicist Regional Medical Physics Unit Copyridge Hospital, Leeds 16

closing date for replies 30th April, 1981

'If ops stopped work tomorrow the country would fall apart'

THERE has recently been a mical and Managerial Staffs misplaced sense of surprise that, (ASTMS) agrees that the status of when a few operators go on strike, Sir Geoffrey Howe's glasses begin to steam up. Surely, the logic goes, computers aren'r that important.

Ian Cheeseman, ops manager for the Municipal Mutual Insurance in Maidstone, believes: "If all ops stopped working tomorrow, the country would fall apart." Not a man to mince his words,

he cootinues: "The country relies they join a union they will have a on a class of people who are in-sulted and denigrated by the company by the throat and

ops is low, and he recognises that "there is a high degree of grievance among them".

With regard to the power of ops,
he differs from Cheeseman.

"I don't believe," says Webb, "that ops are necessarily so powerful. On occasions their industrial power is exaggerated for political reasons to persuade them that if

therefore are being disloyal." people they work for."

Tim Webb, a national officer of the Association of Scientific Tech
Between these two points of view is the truth that ops do have some influence — which is borne

Revenue's sites at Shipley in West Yorkshire, and Cumbernauld in Glasgow, at the clearing banks' centre in Edgware and ar at the VAT centre in Southend.

Operators may not be able to stop the nation but they do have some considerable clout which, if both coherent and organised, packs a punch out of proportion to In terms of overall union organi-

sation, there is now an option to use the rapier of withdrawing a few key staff rather than the bluilgeon of a larger strike.

It must be remembered.

number of people involved. There were always more coal mioers than coal owners. The CBI is relatively small and yet, member for mem-

And the power balance with io the TUC is changing. Some 40 per cent of its membership of about 11.5 million are white collar workers. This compares with a 26 per cent white colfar membership

That change reflects rhe shift in the economy, from being indust-rial to information-based.

Working alone on night shift is within the law

AN operations manager writes in after noticing that the police operators in Kidlington work alone on night shift. He is currently involved in discussions with personnel and safety officers, so wisbes to remain anonymoua.

"In ten years," he writes, "I have failed to resolve the legal position tegarding operators working alone. I have even known of firms with several sites having

different rules or legal interpretations, so that one site will have operators working alone whereas puter operations if there are not

whose legal cagles said that they knew of no legislation forbidding ops working alone, so long as proper provisioo is made for a quick exit in the event of a fire.



PERIPHERAL HARDWARE LIMITED Annifield Close West Molesey Surrey K 18 0EA 1...

SOUTH

famigate 501263.4

NEW TO THE PHL PANGE.

The Microline 80 - either parallel or RS 232-0 Interface plus traptor feed option. Standard parallel interface.

Good discounts are available for quantity.

IRELAND

PEOPLE I

Computer League ready to kick off

THE London Summer Computer League has finalised fixtures for 1981. Now in its fifth year, the league is gaining popularity with every season, with more and more teams trying to gain a place in one of the five divisions. There are six teams per division, playing full II-

a-side games on grass.
The games are played mid-week and each team has one game a fort-night. Demand has dietated that this year, divisions are aplit into North and South, the South playing at London Playing Fields' Raynes Park venue and the North using the same at Coppermill Lane, Walthamstow.

At the end of the season, a match will be played by the two winning teams of each division, to find the overall top teams in London. A cup is provided by Compu-

Ted Samp has been appointed sales executive covering the North and North Wates at SEL Computera. He was previously sales executive in the selentific and technical division at British Olivetti. Also joining SEL is Anne Watson, who becomes aupport analyst at Data 100.

Your opportunity to put Kevin Keegan in the sbade comes in the Knockout competition for the Computer Weekly Cup, where there are atill some places available. Teams wishing to enter should contact Danny Boreham on 01-505 5576, as soon as possible. The Knockout Cup was played for the first time last year and attracted great support, with over 200 people attending rhe final. Incidentally, at the risk of sounding smug, it was woo by Computer Weekly, which best Ventek 5-0.

As if all this isn't enough, there is an annual Presentation Dance held at the end of the season, which usually takes the form of a disco on a boat on the Thames.

the company'a Northern headquarters. She was previously a consultant with IAL Gemini.

Ray Jose has joined Harris Information Systems as senior sales executive. He was formerly with



ANDREW COUSENS is the first student to graduate from Honeywell's new programmer training course which is operated under the Manpower Services Commission's computer training grant scheme. Causens, who works for the Services Kinemo Corp, studied Honeywell Level 6 Cobol program-

sing.
The MSC's grant scheme is available to employers in selected areas of industry and commerce who are prepared to train more people in a new bosic

computer programming course.

The Honeywell BDP Education Plan Service is run by the company's marketing education department and combines short courses and workshop sessions at its training centre in Hammersmith, with supervised projects at the trainee's own offices. A course normally losts between 12 and 18 weeks and covers the National Computing CentrelCity and Guilds of London Institute "746" basic certificate in computer programming.

Reshuffle at Amdahl

FORMER managing director of pany's European System Super Amdani circumpany's Northern European aperatiun, Peter Willers will be in London, and the reporting to Williams in Miles to Pasola and Bell will be to

Torry Pasole succeeds Peter Williams. He was previously marketing directur for Northern

Alan Bell, formerly regional aupport manager for the com-pany's Region One, (UK, Scandi-mavis, Belgium and the Netherlands) has been named director of products suppurt and services for

Reporting tu Bell is Brian Wilion, who is manager of the com-

Linda Ory lins joined TSE Computer Supplies as director of North American daisywheel operationa. She previously spent nine years with IBM.

Robert Gray has left Logica, where he headed salea at the enmsion, to join MMG Associotes as UK sales manager.

Graham Griffisa has been op-pointed managing director of CI Computer Services. He was previously a consultent with

AGM and dinner, followed by human fectors of computing. BCS Cheltenbam and Glos branch, Bls-

tro 41, High Street, Cheltenbam.

Tickets: D. Went on Glos 416301

System X telephone exchange. BCS Glasgow branch. The Musle Room, Staff Club, University of Strathelyde.

Does the Chip Mean the Chop?

BCS Mersoyside branch. Faculty of Science Lecture Theatre, Liverpool University. 6.00.

Effective costing in computer Installations, IDPM Hull branch. Hull Crest Hotel, Perriby High Road, North Ferriby, North Humberside.

Computers and the law. BCS.

Bristol branch. St Vincent Rocks Hotel, Clifton, 7.15.

Computer display systems. BCS Croydon branch. Maple Room, Pairfield Halls, Croydon. 7.15.

Joint meeting between BCS FACS Group and IMA Mathemat-

CONFERENCES

SYSTEMS 81, to be held at the

Munich Trade Fair Centre from October 19-23, will bear the im-

print of increasing interpeneira-

tion of computer technology,

tion of computer technology, office technology and communications technology segments of the overall information technology market. The theme of the conference is Thinking in Systems. The spread of decentralised data processing and the introduction of new information transmission services such as Videoust are a clear indication that inday modern information processing is no longer

formation processing is no longer feasible without sufficient.

Anowiedge of the application pos-sibilities offered by telecommuni-cations. The conference will go

DIARY

APRIL 14

Smarling (Germany and Swing land), Phil Lemay (Franc at Italy), Sim Comiort (Earner Leasing), Simon Awde (ent fairs) and Robert Mayo (With aging director, Tran Telegran) aging director, Tran Telecom nications - a wholly one

subsidiary of Amdahl) Personnel changes have a been made in Amdahi's Rep One. David Wildman, who joe the company as senior members the marketing team in 1979, to been appointed UK sales many

Alan Bell has been nameden tor of product support and string for Europe at Amdahl, Peter W. liams has been appointed past manager of European comma and Tarry Pasola has been a pointed managing director of he dahl UK and general manager

a. University of Birmieius

AGM followed by Compar Magazines, BCS Harlow busi-

The Saxon Inn, Southern Fr.

Humberside branch, BCS & thorpe, 7.30.

Convergence and the electron office. BCS Leeds brists. Parkway Hotel, Leeds. 6.30.

Computing lo schools, E. Reading branch, Small Physics

Lecture Theatre, J. J. Thompson Building, the University, White

Second London Computer Fe.
Association of London Computer
Clubs. North London Polymonic. Details 01-607 2789.
APRIL 15

Training for DP management IDPM Central London branch Pearl and Dean Studio, Breakett Street, London WI. 7.30.

Information processing Ki Manchester branch, ICL Andre

into the development of spiritions and possibilities of telementations in depth. Design from Mucheoer Messerbei abli-

Ausstellungagesellschaft mili-Messegelande, Postfach 12 10 %, D-8000 Munchen 12.

Finniston Report

SIR Monty Finniston, exhest of British Steel, will address the Life

don branch of the BCS at a median on April 23, to be held king on April 23, to be held king waldorf: Hotel, Aldwych, it is

The event is a joint meeting the Institute of Management the Institute of Management of St.

ty's speech will be The flants

Centre, Manchester, 6.15.

knights. \$.00. APRIL 14-16

Computing at British Stel 80

10.30am.

Northern Europe operations. Although this is a neat defini-David Halliday has been a tion, it tends to hide the extent of pointed systems consulust of influence a data dictionary the technical marketing division should have within -management CTL. He joins the company in strices. A data dictionary is, in ADP where he was European to act, a model of the management nical co-ordinator. ervices environment, which outomates some of the functions of

> management aervices. Thus, for exantple, if we examine the entity types of the mangeneat services environment we

so much has been written and

sid about the data dictionary that

it may seem pointless to have yet

another article emphasising its im-

pottance to the management ser-

ices function (data processing,

O&M, etc).
A data dictionary is important,

however. It is the management ser-

vices' own database system and has

such potential as a means of nuto-

mating the functions within man-

agement services and as a provider

finformation, that one can scar-

cely be in danger of overselling it.
One definition of a data dictio-

nary is as "a repository of data

about data" (James Martin, prin-ciole of DB Management). "Data

about data" is sometimea known as

systems/applications, files;

Programmer - prugrams/nin-deles/subroutioes, jobs; Analyst - attribute types, en-

illy types, eventa, functions, relationship types, etc.

If we also examined the functions of management services we

Analyst - functional decompuation, entity analysis, access path imiysis, entity life cycle analysis; Desigoer - reenrd design, inlage design, transaction design, rogram design;

Programmer - prugram miling, job writing, producing let data, testing programa. If we look at data dictinuaries in

this way, we can see that the re-suling DD database and system could be as complex and large as my system we might write for a her and that, potentially, a data dictionary is a powerful tool. There is not a single management services function that could nut other be automated or be assisted the provision of loformation which would take the drudgery out

The DP department thinking of thing a data dictionary is faced with three alternatives: a totally minual DDS, a package or a DDS

It should be obvious, from the provide paragraph, why a totally samual data dictionary is impractible of all but the smallest DP departments. Unfortunately, the department is then left with two thematiyes—to write their own,

tr buy a package.

The development effort rewhited 10 write a good data dictionary system is much the remy tystem is much the same as hat required to write any large database system. In other words, we are taking about man years of affect taking about man weeks. Not man UP departments can justify his development effort.

We are then left with the packages that concentrated almost exclusively on the functions and data required for program support.

this information.

The functional analysis entity types are the event, function and function attructure. Event and function have already been covered in these articles. The function scructure entity type describes the decomposition of the function into sub-functions. It is, in effect, a bill-of-materials type of entity type. on the functions and data re-lified for program support. Analysis is, yet again, a neglected are, as are introducer planning, tolysis systematical and hardware persoon, letaied functions (e.g. keping laps libraries, disc libra-het, monitoring hardware usage, to) The part of the model marked "Dealan" describes how the alements and functions found at the analysis stage were mapped using the mechanisms available. The

The Package designers have options and for privious com-lected feature, on an area which special feature, and project and which of Performed themselves to going as an area for autospa-tion landstimately, thus does not specially regions planting planting parties, pages 1. sein of programs, or clerical tasks), programs, modules, subnomines, resultai or clerical tasks and com-

assume that all packages offer only. in a predefined order). iliis limited support. There are a

DATA is a potentially powerful tool

Repository of data-about-data

The mechanised attribute types few nmable exceptions, such as are called data items. They reault ICL's 2900 data dictionary system, from inapping the attribute types to the record types. Note that there can be more than one data vendors are beginning to develop The data items are treated, accessed and stored together as one

their dictionary packages to in-clude the additional functions reunit which is known as a record type. Note that we can include At present, however, the analyst is usually faced with having to within this definition source docuadapt the package (i.e. use it in a way which was not intended) in ments, a line of computer printout, forms, or transaction types, and that record type within order to obtain any mechanised support for the analysia function. DBMSs goes by other names, e.g. In Figure 1, a much simplified segment type. The record types entity model of the management are themselves treated and stored services function has been drawn, together as one unit and this is known as a file. Again, this into show the scope and complexity cludes report files and manual of the environment the data dictio-

which does ampport the analysis

finnctious. Sume other package

represented by the "entity type"

hute types is represented, together with the actual valid values those

ottribute types are allowed to take,

describes muns such as hour,

time, over time, colour, person and an on, and is describing which ele-

pects of avertime. This is a form of

indexing system and also an aid to definition. This indexing is

sometimes knuwn as keyword in

context, KIC, and keyword out of

If the elements in management

services are to be managed effecti-

vely, additional entity types and

relationship types are required to help in the management function. "User" (job) helps in this process.

Definitions of attribute types, co-tity types, etc, may be distributed to certain users. If we want to pro-

vide indexes for these people or find out who must be informed if a

definition changes, then this.

are, in order that we can review the

element's use and effectiveness.

We may also wish to know who has

the authority to access those ele-ments (privacy): The three

relationship types between the job

and element can provide us with

mechanised function structure describes how a function, when related to another function, is im-

As a result of this level of imple

mentation we have designed systems or applications (connected

Similarly, we may wish to know who the custodians of elements

relationship type will help us.

context, KOC.

n addition, the data on attri-

"relationship type"

nary should be attempting to outp. Nute that many entity types and function's use of an element at the relationship types have been umitted for simplicity's sake.
It is worth "walking through" analyais alage, it is also useful to hold information on a mechanised function's use of the mechanised the model in understand what the elements. In this category there is entity types and relationship types the item usage sub-type, record usage and so on. Questions such as "If I change the permissible attri- The part of the model morked "Analysis" describes the entity types and relationship types which which programs will it affect?" car are used during cotity and func-tional analysis. The entity model is

derived using this structure. One interesting extra relationship type is shown between user and mechanised function, and describes which job is responsible for performing these clencal/ma nual tasks when implemented.

 The part of the model marked "Implementation" describes how the mechanised functions and elefor example, ende values or ranges of values. The "word" entity type ments are implemented using the hardware, or in manual terms actual filing eabinets, etc. A file "Employee record file", could be thents in the user environment use thuse nouns. This relationship can implemented (as part of the implethen be used for keyword extrac-tion, for instance, which attribute types in the business describe aseral disc packs,

If a system is only implemented once, obviously this relationship hetween physical mechanism occurrences, i.e. actual disea, magnetie tapes, etc., and mechanised elements or functiona is one to one, but where there is more than one implementation the

relationship is many to many.

Having looked at the model of the DP environment, we can now turn our attention to the functions. It would be impossible to list all the functions which could be handled by a data dictionary, there are too many. Some functiona have therefore been picked out which have not often been covered by previous articles an data dictioo-

System conversion! By documenting the old system and the new system and the relationship between the elements of the two the data dictionary could control

Validation: All basic validation o

Distributed processing mapping tool: The dictionary could hold details of each of the distributed

I would not like the reader to puter joba (collections of programs systems (and their data) and use and those supported by the application package. the overall entity model as the Designing systems for security and audit (used as an sid hy abow-

ing where redundancy and interacport generation - since a dictionary knowa where dats is to be tions are). Generating Input/Output modfound, and how it is related, it ean ules or controlling the opening, closing and accessing of files, inbe the foundation of a generalised inquiry system. cluding privacy control. Generoting JCL and test files. Documentation: 11 is

Program writing: Automatic re-

hanising the functions.

mentioning that practically all do-Analysis: Many tasks can be aided umentation could be produced or performed by the date dictionary, such as cluster snalysis of the from a data dictionary, e.g. record layouts, report layouts, etc. functions to determine the best Sub-sebemas and schemn genergrouping of functions into applica-

Entity type usage: For entity life nary cannot yet perform the func-tions, but as has been seen in ear-

ller articles, it can provide the information needed for database rograms and DBMS. DBMS performance optimisaon/database tuning.

Storage dealgn: As an aid. the cost of and activity on types of Operational performance evaluaquipment (meclianisms) by anation: Comparing what was exing the possible methods of mepected with what is being In essence, the data dictionary

Software evaluation: Helping should niways be used as the functions and the model required

example, programs should neve

should be obtained from the data dictionary, thus ensuring the consistency of the database. The aim of this article has not been to describe what data diction

Section II - Part 5

of our series describing

a system désign

methodology

by Rosemary

Rock-Evans

anies do at present, but in show what data dictionaries could do and how the scope could be broadened so that they serve the management aervices function as a whole (i.e. organisation and olanırlıng; database design).

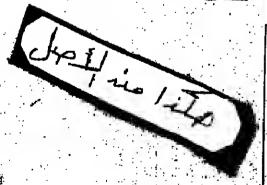
The data dictionary is describing une of the functions of an organisarinn aud is no less an imegral part of the business than any other function such as selling, buying, etc. In fact, it is the function upo which all the niher functions in the business depend, and there should he interaction between the data dictionary and all the functions of

The Data Anolysis inethodology was developed at CACI by Ion

ELEMENT WORO RELATIONSHIP TYPE WORO USAGE EVENT CISTRIBUTION ATTRIBUTE TYPE FUNCTION **OFATTRIBUTE** TO USERS used in FUNCTION STRUCTURE ACCESS ATTRIBUTE VALUE MECHANISEO ELEMEN MECHANISEO **ELEMENT USAGE** DATA ITEM MANUAL OLERICAL ITEM USAGE TASK RECORD TYPE RECORD USAGE PROGRAM MODULE SUBPOUT INE , pic. FILE. JOB. SYSTEM LOGICAL OATABASE MECHANISM MECHANISM OCCURRENCE MECHANISEO IMPLEMENTATION TEM OF PLANT MACHINE ALC

Figure 1. Simplified antity model of data processing function.

Every Computer Wang sells is a perfect fit.



Whether you're buying your lirst computer or moving up, you shouldn't have lo settle for a general-purpose answer.

small business computers to ; our powerful VS computer tam-. fly, every Wang system is designed to be specifically lailored - in hardware and software - to do exactly what you need done. From simple bookkeeping to large scale dala processing.

And no matter which Wang system you start with you can expand easily and affordably, from the smallest to the largest model in the line. And full software compatibility within each product family ptotecis your software investment. So instead of settling for

With Wang, you don't. From our 2200 series of

Our arnull business computer product termly ranges from the 2200 SVP to the multi-liser 2200 LVP and 2200 GVP.

a compuler that's just right for

everybody, call Wang. And gel a computer that's just right

Wang (UK) Limited, Wang House, 100 Georga Street Landon, W1; United Kingdom. Tel.: (01) 486-0200.

	The same of the last of the la
L	I'm interested in a fitting.
1.3	i interested in a fitting
10	Tell me more
١,	An and Mole
11	
H	Maine
Į į	
	[14] [14] 经国际公司 医二种多种毒物
ŀJ	11 Tolon 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
ľ	
.:.	American Control of the Control of t
	Organization
į,	The second of th
1	Address
- 1	
. I	The State of the Control of the
ı	$(-2\pi)^{2} \frac{1}{2} $
	Islayrona
3	Buckey of the start they are said they are
H.	The state of the s
- 1	The second secon
	Send to Warry I has been and
٠.,	Sand to Wang (LIC) Limited Wang House.
	100 George St. London, W.
	A STATE OF THE PARTY OF THE PAR
	自由中央中央政治的一 <u>企会的</u> 企业的企业。第一
- 1	A STATE OF THE PARTY OF THE PAR
٠.,	WANG)
. 1	
-	

PRACTICAL CONTINGENCY PLANNING RECOMMISSIONING AND INSURANCE FOR COMPUTER SYSTEMS DISASTERS

One day Conference

that can and do happen Wednesday, 20th May, 1981 Flotking Inn, Swiss Cottage, London NW3

European Study Conferences Limited

Report.

The Problems You Can Meet - Planning For Conlingancies Senting Up A Standby Centre - Relying on Insurance Regivery and Recommissioning Computer Equipment For further details please contact: European Study Confidence Ltd. Kirby House, 31 High Street East, Uppinghett Author LESS Serv. Tel: 1067282 2711, Telest \$435.

HOLE IN ONE Everyone likes a success story and our winning way with continuous

stationery is clearly no fluke. Our sophisticated plant makes sure all the holes in our paper and labels are in exactly the right place! So you can rely on an accurate print out every time.

results at a stroke. John Dickinson Stationery, Apsley, Hemel Hempstead, Herts HP39SS Telephone 0442 42124, Telex 82452

Send for our sample set and

brochure today, and improve your

CroxleyBUSINESS FORMS



DROGR ANALYSTS

Computer Systems Limited

DEC SYSTEMS FAST!

ST. MICHAEL'S HOUSE NORTON WAY SOUTH LETCHWORTH, HERTS SG6 1PB

- PDP_® BASED COMPUTER SYSTEMS
- FULL RANGE OF SOFTWARE
- PER CALL OR CONTRACT MAINTENANCE AVAILABLE
- WIDE RANGE OF DEC_O **COMPATIBLES**
- TEL: 04626 79331 TELEX:825647

systems and compatibles in stock

★ POP11/03 ⊕ /TO VAX 11/780 ⊕ * · TOTAL DEC 🐵 OR

COMPATIBLES * APPLICATION

Tel: 01-349 2911 Telex: 28227

BUY SELL TRADE DEC PDP11

ors, Peripherals, Modules or complete

AVAILABLE NOW

VT100s £875

Gall Peter Stock or Peter Hufton 0802-881774 Dectrade Ltd., 11 Musters Road, Wast Bridgford, Nottingham Talax 377678 VIDEUR **NEW from**

Lambart computing

PDP* 1144

Oual RM02 or RM06 compatible disc Mag. Tapa 300 or 600 LPM Printer OPERATINO SOFTWARE LICENCE

IMMEDIATE DELIVERY

LAMBART COMPUTING 52 Magishings Read, Meldenhead, Berks, 81,5 89N Tel. 0628 72037. Telax: 848636 Registered Trads Mark of Olgital Equipment Co. Limited

SORTER - REPRODUCERS - INTERPRETERS

* EXSTOCK * NEW/FULLY REFURBISHED

* FULL WARRANTY * VARIOUS CODE OPTIONS

CDL COMMERCIAL DATA LTD.

IBM 129,029 PRINTING CARD PUNCHES

Downham Rood, Reinaden Hoeth, Sillaricey, Essex TEL. BASILDON (0268) 71D292

AIR FILTERS & MAGNETIC HEADS



Magnetic Heads and Air Filters available on stock for the following Disk Drivas:

CDC, AMPEX, DATA GENERAL, DRI, DIABLO, CALCOMP, IBM, PERTEC, WANGCO, MEMOREX, IOMEC, 185, BASF, ETC.

VAS COMPUTER PARTS AND ACCESSORIES LIMITED, TOWER HOUSE, COLLEGE ROAD, BROMLEY.
KENT, ENGLAND. TELEPHONE: 01-464 5855; Telex: 896559 CALL US FOR FURTHER INFORMATION AND BROCHURES

Computers Bought and Sold

E O B LIMITED

Tel: 0783-44777 Telex: 837763 .

WANTED IBM, ICL COMPUTERS

We specialise in buying and decome liaming computer squipment.

Raybold Computer Services, Unit 12 West Station ledutivial Enter Spital Road, Miction, Ester Tel, Maldon (0521) \$4850

1981 FEATURES **PROGRAMME**

30 April

-Compec Europe Preview/Competition from Abroad

14 May

-National Computer Conference Report 28 May

Data Input Technique 18 June

-International Word Processing Show Preview/The Automated

Contact: David Hogan on 01-661 3500

SURPLUS TO REQUIREMENTS

DYNABYTE DB8/2 (5200), Duel 5" FD. As new with manuale. Prica £1,800.

DB8/1 (5100), as above with metching unit, Dual 8" FD. As new with manuals, Price £2,500

IMSAI 8080 (8080/5100), complate with matching unit, Dual 8" FD, Good condition with manuals. Price

Tel: 093-781 330

TIME FOR SALE

DATA GENERAL ECLIPSE RDOS/INFOS AND COBOL

All facilities available

VERY COMPETITIVE RATES TEL: 01-681 3021

DEC PDP 11/45 FOR SALE

Due to equipment upgrade the following equipment is aveilable: (All DEC aquipment DEC meinteined).

Offers around £20,000 to: Gordon Herrie (0424) 430824

BARGAIN

Perkin-Elmer (Interdata) 7/32 System including: 512 kb memory

2 x 67 magabyte removable disc drives

+ Card Reader Paper-tape Reader/punch, Twin Cesestie drive VDU. Page Printer; and all. essociated interface/controllers. System approximately 3 years old, fully maintained by manu-factures.

★ PDP11/45 UB Processor
★ 256KB Mamory (Incl. 32KB bi-poler)
★ FP11C Floating point accelerator
★ 3 x RP03 40 Mbyte disk drives + controller
★ 2 x TU10 Mag Topa drives + controller
★ DH11 16 line Mulliplaxer + 1 DL11E
★ 5 x VT52 VDUs + 4 non-DEC VDUs

1 x 8-track, 600 hpl tape drive 9 x PET 1200 VDU'e 1 x 900 lpid fine printer 2 x Carousel terminal printer

Helessa Data: April 81, Offers around £35,000 Tel: 0632-562112 ext. 206

Knight

Advertising Kales PHONE:01-661 3500 ext. 3571 **Vataprinter**

FOR SALE NEW TVt 9t2C, Price £490

ADM3A, AOM3A + end MX80 F/T of very low price e also provide maintanance of Microsystom VOUs and Printers Tel: 01-751 2158 up to 8 p.m.

TEX 4014-1 Termins!

TEK 4954 Tablet

Benson 1302 Plotter c-demo, evellable immedi

Offere invited.

Telephone 0802 8657 45

FOR SALE

เมียนดนร Computer Stationer

hone or Telex for Quotation Cornerwaya Press

Telephone:(0582)411234

Pelex: 825132 PRAKA G

Delivery 2 weeks

MB OEC RL01 diek system com x RLB1 Disk Orives, Controller OEC sia Cabinet and 18 Olsk Packe Plue Systime 7752 VOU's

Offers for the whole fot or individue wils...all 2 years old.

Tel: 01-390 3871

DEC SYSTEM

PDP8E

6K core, two RK05 disc drive + Interfece, mulli-channel A to Persilel port, Reel Time clock, AE, TTY's end interfeces, otc.

Olfers around £4.000; wi

Ring 081-248 6818 eferably evenings/wool

FOR SALE E.D.S. Bureler Docullator Model KST4, £1,750

delells telephann thn

Computer Supervisor on 01-638 5282 or 01-638 8711

We buy, eall end meintain DEC baead eystams.

For lurthar detellaring: Paul Taylor, Mick Whitlem 0582 425881/2/3 eoff Bramwell, 061-747 7177

> **NEW DEC**? **USED DEC**

D.P. CONSULTANTS LTD. 01-449 3812 01-441 0793

FOR SALE

A entail well established computer training business with an excellent growth po-

Write to 8ox No 1135

NEW DEC EQUIPMENT FOR SALE

t 11-44/CB 256KB ECC TU58 9842 CAB t 11-34/LF 64KB 10.5 80X DL11-W 9312 atc t RL01 Drives and Packa available t VT100-ABs and advenced video option t LA 120-DA DEC Writer

Talax 335001 Contact: Ron/Bill - SYSCOM LTD. Phone 0384 236701

PUNCHING PROBLEMS?

the established specialists

PREPARATION HUGE CAPACITY

437 3977 & 688 3828 TEMP & PERM PUNCH OPS

1-323 1100 & 686 2670 HOW FOR PROMPY

like Of Cards 21 Total State Court Read to Court Will Day of the Will Day of the Court of the Cou

Nelson Computer Services Lid. NEW REFURSISHED & SECOND USER EQUIPMENT

IBM 3741/3742 Key Stations IBM 029 & 129

Printing Punches

UNIVAC 1701 & 1710 Printing Punch Verifiers All with maintenance

FORMS HANDLING Bursters Decollators Guillatines, Shredders New and Rule billied ALSO Hand Purches, Printer VDU Desks, Data Storage

St. Johns Court Reviewshift Lancachine 884 7PA Phone 67062 29125 (5 Ross) Tees 535815

NEW/USED COMPUTER EQUIPMENT BUY OR SELL THROUGH (W()D()P SAMPLE UNITS AVAILABLE FOR SALE:

IBM 3348 Data Modulas 5 × Dryco 4000 5 meg. disc drives DG Nove 210 Ventek Data Point 2200 NCR 8200 and 8250 Systams, atc. atc.

NEW DE LUXE 80 COLUMN HAND PUNCHES (EX-STOCK)



(W()D()P 01-464 8011 TELEX 886966

FOR SALE

4 x NCR 32 with Papar Tapa Punches Kode 77 Paper Tapa Punch and Varifiar 50 x NCR 656 Diac Packs, 5 Megabyta Offere please

Don Wood, York Trailer Co. Ltd. Northallarton, North Yorkshira Tel: 0609 3155

FOR SALE

DEC PDPSA 32K Byta, 1Mb Disc 1 Printar, 1 VDU 2 years old

Talephone 0273 4134B6 (Pater Thaxler)

DEC and DATA GENERAL

Buy, Sell or Trade

● MM8-EJ ● 11/34 Mamary (MS II-LD)

Call: Alastair Dods, 01-464 0942

SUPERLATIVE USED COMPUTER EQUIPMENT-AS NEW CONDITION

DEC DISKS

Mus-1 23 over, seat on the arms 1250.00 RLOLAR, 5 Meg. add-on disk drive C1976.09 RKOG 14 Meg. add-on dak drive none C3250.00 RKO7-ED 28 Meg. add-on disk drive P.O.A.

DEC OPTIONS - PDP11 SERIES

DEC OPTIONS - PDP8 SERIES

HEADOC NOW ALSO AVAILABLE WITH 15×80 feet (orner and C-NOS legic 15×75.00

OPRES Communications Adapter KARE Fosters L/O Cas

0011A 4-dol system unil - DD11B 4-slot system unif - DL11 Sensi Interface DL11WA/B Sensi Interface/Lyna Clock

Thomas Business Systems, Ltd

DEC PROCESSORS POP 11/03-SD Processor or 31-in Chassis complete with 16KW MOS Memory and EIS option NEW E1495.00

POP 11/64 Processor in 10% in Chasses complete with ISKW MCS Memory and DLI tW Interface (can be enhanced to 28kW) MEW £4500.00 PDP 11/34 Processor (non-At in 10 bin Chassis complete neth 128KB MIS Menory, DL 11V Interface and Programmer's Front Panel. E5900.00

DEC TERMINALS LA 34 DECember IV with RS232 Interface and Lineton Ford Option CA95.00 1A 36 DECuriter It with RS232 Intertice C750,00. VI 32 DECiscone with RS232 Interface : £450.60

Hezeltine YOU's Higgs The law for prood

hely permise — campatible victo

singley terminal, offening year chock

of barraneton Septem put to 9500

hand as well as party generation and

checking 17×(10 signey, sport zero

ASON 182212 Interior, Chock of

his of zith.

SUPER VALUE

1793-00

Medicar One, How with upper/times case, XY oppor obtassing, 24×80. Interdepting, dual intrastity detaclogist beground, choice of 8 machinestics palss up to 9560 band.

ALL EQUIPMENT RECONDINGUED BINLESS OTHERWISE STATEO Electronic Brokers Ltd., 61/65 Kings Cross Road, Landon WCJX 91.N. Tel: 01/278 3461, Teley: 236694

WE SELL WE BUY ENERLECTRONIC BROKERS LTD

ATTENTION! ATTENTION

ATTENTION!

Do you have any unused or redundant computer equipment that you want to sell? If so, call me, Xenia White, to find out how easy it is to place an advertisement in the Market Place section of Computer Weekly and reach over 100,000 Computer People in this coun-

> My telephone number is 01-661 3500, Ext. 3571

DON'T DELAY - CALL TODAY

WE BUY IMMEDIATELY THE

FOLLOWING IBM MACHINES: 3350 A02 with feeture 8150. 3803-001 and 3803-002, 3420-003 until -008, 3344-802,

4341-L01 or M02. 3411-003 with canel ettachment and attechment system/3. 3202-005. System/32, 24K, Diak 13,7 M10, Printer 155LPM, or greater. System/1, Single Components or complete systems. Please give us dalivery time and price.

Detanverarbeitung Klaus Huebnar GM8H Roestr. 52, D-7000 Stuttgert 1 Tel.: 0711/63 84 28 Talex: 0721992 DVKH D

VME/B and DME (System 4)

Time Sale

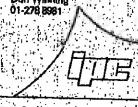
Having balanced our workload very successfully between our Iwo lines, we are now in a position to offer time sales on our 2972 and 2960 situated in Haywards Heath, Sussex.

Wa can offer the following:

- Competitive rates - Batch or dedicated alots MAC (in house)

- Collection and delivery -- if in our - On-alte technical back-up British Rall Red Star delivery

if you are knot everload situation or awaiting delivery of your own machine and require time please give us a call:



Don Winning 01-278 8981

Whatever your staffing need you peed Kriight Ten years in the industry has given in a powerful reputation. As powerful as our capabilities, in fact. Which greened between your requirements; location as powerful end our capabilities, in fact. Which greened between your requirements; location as powerful end our capabilities. In fact. Which greened between your requirements; location as powerful end our capabilities. In fact. 14 Old Park Landon W. 19 ANT. 18 July 21348



Providing a good atmosphere

WHAT is claimed as the latest in cycle is required, which minimises environmental engineering technology has been incorporated in the Compac 81 range of close

The development comes from Wright Air Conditioning of Birmingham, which specialises in the environmental requirements of computer users and production of the range has begun already.
Wright hopes to contain produc-

tion costs through a manufacturing process study, an important achievement in the light of current inflationary trends.

The company's design and development team bas produced its owo Wactronie one-board electronic controller with in-built memory system including a recycle o zero to prevent maximum power

Compac \$1 provides a supply air temperature of 60 degrees Fahrenheit (15 degrees Centigrade) to the underfloor void. This feature climinates cold draughts at floor level and reduced the possibility of level and reduced the possibility of thermal shock to the computer Wright claims the sensible heat

ratio to be upwards of 0.99; inrunning costs per ton of refrigera-tion delivered.

Introducing s solenoid valve is said to offer a new coil characteristic providing a lower sensible heat ratio when the debutifilities in

re-heat requirements in turn.
The humidifier tank has hot and

cold sections to meet local water authority requirements and cold water supply to the tank is controlled by a solenoid valve offering conservation benefit.

The tank incorporates a timed

flushing facility enabling it to be cleaned at regular intervals, parti-cularly important when dealing

Compac 81 has a capillary fed evaporator which eliminates the need for expansion valves and redires setting up time and mainten

The floor supply range will com-prise six models, the amulicat be-ing the FS6 with a total cooting capacity of 63,000 British Thermal Units or bone to the PS 21 (252,000 BTU/hr). Room Supply(RS) equivalents will be in-

Compac 81 is produced as stan-dard in direct expansion (DX) ver-sions, four options being available on request. The options are low pressure hot water heating coils as alternatives to electric water heaters, chilled water units, inbuilt water cooled units and glycol economy cooling call.

Wright Air Conditioning Ltd (CW), Sampson Road North, Camp Hill, Blands aris Bil 181, Tel: 011-773 8421.

Multi-terminal system



Olivein TC 1800 has open inded

VT 103 terminal with speedy access time

RAPID Recall is introducing the verse video, blinking and variable VT 103 microcomputer terminal for use either as a local distributed network processor or as a standa-

The VT 103 comprises a CRT nonitor, detachable alpha numeric keyboard plus separate numeric keypad and an LSI-11 backplane providing slots for up to eight plug-in boards.

Designed by Digital Equipment

Corporation(DEC), it is available in the VT 103-AA and VT103-BA versions, the latter incorporating two TU 58 mini cassette drives and their associated read/write control logic providing masa terminal sto-

Based on DEC's successful VT 100 terminal, the VT 103 crt monitor has a 132 column by 24 line display presenting 7 x 9 dot matrix characters with true descenders and ascenders for easy reading.

Other important features include operator-selectable double height/double width characters,

The detachable keyboards has a standard QWERTY typewriter layout, with special function keys for editing and data communications. The separate 18-key numeric/control keypad apeeds the nu-

150 and 38.4K baud.

microprocessor enabling informa-

Average access time is 9.3

econda and blocks can be erased

and rewritten without disturbing

adjacent blocks as they are of uni-

The VT 103 can be employed as

s simple terminal, a general pur-

pose microcomputer with Integral

mass storage capability or an Intel-

ligent terminal with a free explana-

tory brochure available from Ra-

Rapid Recall Ltd (CW), Rapid

House, Denmark Street, High Wycombe, Bucka HP11 2ER.

tion to be stored and retrieved.

merical data entry. The VT 103 includes an internal power supply for the LSI-11 back-plane assembly and a cooling fan. Provision is made on the backplane for +5V and +12V dc battery back up power supplies to be

Rapid Recall says that a complete and powerful microcomputer system can be configured using the VT 103 by plugging in LS1 central processor, memory and serial line interface or multifunction mod-

built up from standard products to suit individual applications, says the company. Rapid Recall can supply all necessary boarding. The factory-installed TU 58

double density, normal and re- tape drive on the VT 103-BA is a Tel: 0494 26271.

EPROM eraser package

tape cartridge mass storage system M1CROSYSTEMS Services of High Wycombe has introduced the Model EP-10 low cost unit to in range of EPROM crassers, director that will handle up tu two drives uf 256 K hytes each. It communicates the processor via a standard serial port at speeds of hetween inwards hobbyists programmen of products requiring a relative small number of EPROMs and Msin advantage ul the unit is that Rapid claims it provides bulk equipment manufacturen u storege and fast access at reasonterested in large numbers of supp The unit employs an internal

EP-10 is said to crase up to be 24 to 28 pin EPROMs at a time h radiation drawer is arranged to that a high-intensity UV lamping. diates at ten micro-memories win the same energy and the entireme weighs only four kilogrammes.

A built-in lamp shows with power has been tutned on and a safety interlock shuts off the ultraviolet source when the draw Normal operational voltage

230V 50 Hz with optional 110 6 Hz and tube life rated at 2,000 Microsystems Services (CW), 11 Duke Street, High Wycomb, Bucks HP13 6EE. Teh 669

Televideo VDU on offer BELPER (Derbyshire)-based for continuous display of terminal systems and terminals house Mid-configuration and 15 special charconfiguration and 15 special char-

PRODUCTS - 2

around, split screen with line lock

danchester

and selectable smooth scrolling.

lectron has added the Televideo acters for powerful line graphics. TV1 950 to its extensive VDU With its detacbable keyboard and tiltable non-glare screen, the TVI 950 retains all the 920C TV1 950 may appeal to all operamodel features with the addition of tives and has the option of up to Il user-programmable function four pages of memory. keys, advanced editing with wrap-

Midlectron Ltd (CW), Midlectron Housa, Nottingham Road, Belper, Derbyshire. Tel: 077-382 It also includes a 25th status line

Kern stereoplotter has map-making potential

cartographic problems has led to s phic digitising system. Kern stereoplotter carrying out all he functions of a conveotional first order stereoploster and incorporating many additional features

ssid to be unavailable oo other other input output devices. The Kern DSR 1 system can handle a wide variety of inputs.

Unlike many other first order machines, the DSR 1 system is said to sccept many different for-mats including satellite photo-graphs like Skylab 46 x 23 cms

An integral microprocessor compensates for wide scale dif-ferences between two given pictures in a atereo pair and also corrects vaw and skew variations between pictures due to attitude or positional differences in the air-

craft taking the photographs.
Although microprocessors are used extensively in the stereoplotter, the DSR 1 system is also compatible with a powerful Digital Equipment PDP-11 series

Using Digital's powerful Unibus

DSR 1 users will also have access to conventional DP peri-pherals via Unibus, including mass storage, plotters, printers and

Laser point marker facilities are said to help the user make indelible marks oo the surface of photographic emulsions, enabling the operator - to make tie and pass

This is useful when carrying out serotriangulation in areas such as deserts which are devoid of useful physical features on the surface.

There are three separate computer processing centres within the DSR 1. The P1 interfaces with the operator via the console during onoperation and helps to process

application programs.
P1 also communicates with processor P2, sending data to an external PDP-11 series computer or a standalone graphica peri-

tion process from information fed to the instrument by the operator via P1 and accommodates

fraction and lens distortion outo-

It implements repositioning in-

structions from the operator, transmitting positional co-ordiand operating instructions to the operator via P1. P3 provides information to the

operator in an operator-compatible form and acts as a prompter. making sure the operator does not for a particular application

It accepts and interprets operator commands, displaying data on s VDU and interfaces

The Kern DSR 1 is claimed as one of the most cost-effective stereoplotting systems on the market, its £47,500 price - including external PDP-11 computer - being in line with older first order logue machines.

Survey and General Instruments Ltd (CW), Technical Instrument Division, Fireroft Way, Edenbridga, Kent TN8 6HÅ. Tel: 0732 864111.

Keeping disc flow moving

ARROW Computer Systems has announced the UK release of Minicomputer Technology's latest emulating disc controller for the DEC PDP-11.

Designated the EDC21 controller emulates the DEH RHII connected to multiple RM02/03/05 drives and runs under current revisions of RSTS/E RSX-11M and RT-11 without

software modification. The EDC 21 will handle up to four drives, including Wincheste types, in the cartridge module, sto-rage module, fixed module and minimodule categories.

Any combination of drive capa-

clties (e.g. 80, 160, 300 and 600Mbytes/drive) and most combinations of drive categories can be

supported on a single controller.
The EDC21 bas dual access caability as standard allowing two CPUs to share a common database on dual ported drives.

The single unit price is £2,500. Arrow Computer Systems (CW), Resemount Tower, Stafford Road, Wallington, Surrey



IBM all set for PoS revolution

THE GENERAL Systems Division of IBM UK has announced a forthcoming 5265 point-of-sale ter-minal providing up to a fourfold increase in memory capacity be-sides the Diskette 2D (.98 mb)

announced already.

The 5265 will be available from October and is part of the IBM 5260 Retail System usable by retail stores to register, capture, monitor and track sales information. Terminals can transmit sales and other information to a computer to gen-

with increased memory capa-city of up to 128K-bytes, the 5265 models enable more price and credit information to be stored in each terminal, allowing retailers to implement faster and more effi-cient register operations.

Using a six digit item code, mately £135 exclusive of VAT.

maximum storage is said to allow IBM UK Ltd (CW), PO Box
sales staff to retrieve automatically 32, Aleacon Link, Basingstoke,
selling prices of 16,000 items or Hants RG21 1RJ Tel: 0256 56144.

check credit status on up to 24,000 six digit account numbers.

Communications capabilities will allow retailers to update information stored in the new models from a central location. Changes to price and credit files can be created at a central compu-

ter site, then transmitted via telephone lines to unattended IBM 5265 branch store terminals. . File changes and message

printing can be initiated automatically - again with the 5265 termi this operating unartended. Baisting IBM 5265 models can

be upgraded to include all the new functions and pitrchase prices for the new models range from £3,152 to £4,281, with monthly lease rental charges ranging from approxi-mately £135 exclusive of VAT.

Floating point processor raises Eclipse potential

A FLOATING point processor processor is user-transparent, no (PPP) said to make the Eclipse reprogramming is necessary.

MV/8000 computer the fastest 32In the event of a problem, bit sixtual memory machine is be-

bit sixtual memory machine is being marketed by Data General.
Floating point instruction formats for the FPP are leentical to the previous Eclipse MV/8000 microcode formats resulting in total user transparency to floating point implementations.

Programs written earlier for the 32-bit mini-mainframe with RAM-My/8000 system will run without based microcode.

modification using the PPP. Users Data General Marketing Committy installed 8000 systems can mulications (CW), 724-734 Lonupgrade their configurations to induce the configuration that is not induced the configuration to induce the configuration to induc

reprogramming is necessary.
In the event of a problem,
microcode instructions of for the
non-FPP instruction set can be booted into the system so that operations can continue in a slower

mode, but with no downtime.

This is claimed as unique to
Data General because the Eclipse
MV/8000 is described as the only
32-bit mini-mainframe with RAM-

OLIVETTI has introduced the give improved performance based to system aimed at the distributed comprises two basic keyboard and user. The TC 1800 is an open visual display imodules to which the distributed comprises two basic keyboard and the comprise two basic keyboard and the comprises two basic keyboard and the comprise two tered system flexibility, more work stations, ergonomically designed mous negation.

The 1C 1800 has been developed from the earlier FC 800 to specialised terminals; each catering to a specific user requirement.



disc unit peripherals for autonomous negation.

There is wide range of specialised terminals; each catering to a specific user requirement.

Let instance, the TC 1800 has been ordered by some bank; and finance houses; workstations may be adapted for use at bank; counters, incorporating badge/credit card residers and PIN pads for example.

card readers and PIN pads for example.

The TC 1800 is decible, allowing different components to be added, modular, enabling units to be placed anywhere in delation to each other, and ergonomic.

The system may also operate with Olivetti systems such as the ATS automatic teller:

British Olivetti Ltd (CW) 30

Berkeley Square, London WI.

Tel: 01-629 8807.





Whatever your own standards of productivity and graphics performance, you can turn to

Graphics, the

true universal

For 12 years,

standards by

which graphics

information is

In resolution.

Size. Software.

measured:

Service.

Reliability.

Compatibility.

product line.

And breadth of

language.

Tektronix

has set the

We'll measure up.

Tektronix.

es Catalogo indicate al Estate egyes, codbyks, fo penta citled ad

Diablin

Tektronix

ppointments E NEWSPAPER COMPUTER PEOPLE RELY ON ppointments

Sor Numbers. Should be addressed to the box number in the advertisament $e^+\alpha$ Computer Weekly at the above address

Classified Production G1-661 3500 Ert.

T0 £9K + CARANALYST/ **PROGRAMMERS WEST LONDON**

The planned development of new systems for the UK and European offices of our client offers exciting career opportunities for ANALYST/PROGRAMMERS in West London.

The Company operates a highly successful commercial business and relies extensively upon computer systems for their future. IBM hardware with database and on-line software is currently in use, and the development team is now to be expanded to work on a range of new projects.

At least two years' IBM COBOL is required and applicants will also offer a natural aptitude for systems design as they will participate in all phases of project development.

A company car will be offered to the successful applicant and the commencing salary is further enhanced by an attractive range of

Ref: W1/0904

OPS MANAGER YOUR NEXT MOVE

S.W. LONDON c.£10,500 (CAR OPTION)

Reporting to the Managing Director of a major international organisation, this position offers variety, challenge and a positive career move to the successful applicant.

Willing to accept responsibility for an independent cost centre, candidates are most likely to be working in the operations department of an IBM DOS/VS (or DOS/VSE) installation and will possess an in-depth knowledge of the operating system along with its associated software. Systems programming involvement would be an advantage but the ability to manage and promote the activities of the section is of prime importance. The areas of involvement will encompass: involvement will encompass:

★ TECHNICAL SUPPORT MANAGEMENT ★ ★ CUSTOMER LIAISON ★

★ PROGRESSIVE ENVIRONMENT ★

Servicing clients throughout Europe, this position requires someone with drive and initiative and it will provide every opportunity for further career advancement.

Ref: \$1/0904

MYRIAD APPOINTMENTS LIMITED 30 Fleet Street London EC4Y IAA Telephone 01-353 0981 24 hours

DATA PROCESSING MANAGER

Out client, a elecassful and expanding service company, have achieved market leadership. Through applying OP solutions to their day to day problems in a creative and unique siyle.

As a member of the management team - responsible for all DP activities, the DP Manager is expected to contribute his or har expertise to the overall development of the Company.

Ideally experience will include, at least three years of the ICL 2003/4 range in experience of the ICL 2003/4 range in experience of the ICL 2003/4 range in experience of mahagemann responsibility. Age is less important than evidence of a high level of intelligence; well-developed communication ekilis; the capacity to learn rapidly; a heightened constant time pressures to exacting alanderds.

The rewards are excellent, not less the opportunity to become involved in many aspects

Pleasa write with full details of your cereer to dete end quoting reference no. 105/292 to

and the state of the control of the state of

Professional Personnel Consultants Limited Orchard House, 1 Orchard Lane, Huntingdon, Cambs, Talephone: Huntingdon (0480) 55333/85334

"an equal opportunity vacancy" Tell Production than and the second

Division to the contract of th

Computer Services Officer \$10,092 - \$12,736 p.a. Based Aberdeen.

berdeen is a city with its own cultural life, and exceptional lelaure anytronmant. Academic illa

exceptional lelaure anvironment. Academic ilia centreseround the tamoua university, Restauranta picture, iliprariettiheature and sporting itealities. Shound The Heelth Service in Aberdeen is probably one of the most edvanced in the country and currently has a vecancy for a Computar. Servicea Officer.

Based at the Board's Computing Centre, the person appointed will be chilat adviser on the use of computars and will be the administrative and technical head of ell data processing activities. Should blacussions currently taking place with heighbouring Heelth Boards fead to the establishment of a Northern Computer Consortium, the successful candidate will assume the fole of Computer Consortium Manager.

Applicants should have expensive experience of computing in atreable ineleliations, slong with the

عبا

ebility to control systama de sign, programmingand operaling siefi. Knowledge and axperience of data

operating sleff. Knowledge end experience of data base menagement, financial end budgelry eystame ere destrable requirements. Knowledge and experience of the Health Bervice would elso be a considerable edvantage.

The salary for this eppointment is on a scale of £10,082 rising by 5 increments to £12,738 per annum. Additional benefits include \$37 hour week elck pay end superannuation schemes, 5 weeks plus 10 deye statutory ennuel feeve, a pleasant working environment and assistence with rejectation expenses, it applicable.

Forms of application and job description may be obtained from the Area Personnel Officer. Grambian Health Epard, 1 Albyn Place Aberdeen. Tel. 0224 29901, with whom completed applications must be fedged by 8 in May, 1881.

CHB Grampian Health Board

Always time for you

more and a supplication of the supplication of

IMYRIADI

Your future in Hampshire



The company's head affice is situated in North Hampshire and is well served by public transport to surrounding towns and villages and also enjoys fast road and rail links to Central Landon and the South Coast. Apart from working in modern offices, and benefiting from comprehensive employment conditions, GENEROUS RELOCATION ASSISTANCE is provided to an area where housing is attractively priced.

Our client is one of Europe's largest manufacturers of agricultural feedstuffs, and market a range of products which have carned a high reputation amongst all types of

The company's commitment to Data Processing is reflected by an impressive range of hardware to cumplement their sophisticated husiness systems. Utilising Itel AS/5 (IBM 370 plug-compatible) mainframe facilities, together with PDP 11/70, two PDP 11/34s and twenty Ventek Detapoint minis is enabling them to pursue a policy of distributed processing and this has created two interesting opportunities for computer professionals wishing to further their career in a dynamic environment.

DISTRIBUTED PROCESSING SUPPORT PROGRAMMER

to £7500

Centred around a national network of Ventek minicomputers, this position offers an ideal opportunity for a programmer with at least two years' experience to gain involvement in the support and development of a comprehensive factory computing

Candidates should ideally have experience in a minicomputer environment and will receive training in the DATABUS language where necessary. A current driving

DEVELOPMENT PROGRAMMER

With extensive new development planned to commence shortly the successful applicant will contribute effectively to the company's computer applications. Offering experience of COBOL, DIBOL or PL/1 and an appreciation of minicomputers will enable you to be involved in the specification, design and programming of interesting applications.

JUNIOR BUSINESS ANALYSTS

CITY

£7500-£9000

A major international organisation is urgently seeking to appoint an additional two ambitious and self-motivated people following the expansion of its City office.

Applicants will be interested in business matters; keen to develop management skills in a position offering job satisfaction, high rewards and the apportunity of developing personality and expertise in the Computer industry. Dealing with people, developing relationships and understanding client requirements will be a major aspect of the work, involved the contract of the work, involving communications and computing skills.

Under 27 years of age you should be well educated with either programming or analysis experience gained in a commercial environment. In addition to a confident and outwardgoing personality the ability to work and the potential to work on your own initiative is a key requirement and the potential to grow with the company is of prime importance.

These positions offer a first-year salary in the range £7500-£9000 and substantially higher rewards will be achievable following comprehensive training during the first year of appointment. The company offers a professional approach to computing issues resulting in a high competitive spirit and united commitment to growth.

Ref: E1/0904

UNIVAC 1100 – IBM 370 MINICOMPUTERS TECHNICAL PROGRAMMER

WEST LONDON

1½ YRS.+COBOL

An interesting opportunity exists for an enthusiastic programmer to join a small group engaged in a wide range of systems activities. The successful candidate will design and develop small specialist systems to run on both mainframe and minicomputers as well as providing detailed technical support to users.

This role is most likely to suit a person with eighteen months to two years' COBOL experience who is looking to move away from the routine of project development into a role where his/her talents, interests and abilities will be given ample scope to expand and where a working knowledge of a wide range of hardware and software will be rapidly gained. A current appreciation of a second language will be advantageous as would a Computer Science degree, although this is by no means essential.

Our client is a major international engineering and construction organisation based in Hammersmith. They offer excellent career prospects and benefits including free life assurance, flex time, paid overtime, interest-free season-ticket loans and a company ponsion scheme.

Rcf: N1/0904

TO £8000

MYRIAD APPOINTMENTS LIMITED 30 Fleet Street London EC4Y IAA Telephone 01 353 0981 24 hours

Sales Management c. £25,000

THE VALUE OF THE COMPUTER IS STILL LARGELY DEPENDENT UPON SUCH HUMAN TALENTS AS SKILL, INGENUITY AND CREATIVITY.

That is why considerable success has been achieved by the company's clearly defined sales philosophy and a support program unique within the computer services industry. With a turnover in excess of \$200m worldwide the time has come to expand the U.K. activities by creating a new operation.

You will be a goal orientated man manager with a proven sales track record in sophisticated commercial D.P. applications and also have the ability to build a successful sales and support team. The successful applicant will enjoy considerable autonomy and the position will lead to associate director level within U.K.

In the first instance, telephone MIKE LINFORD on 01-405 0442. Or, send a brief C.V. for his attention to: High Holborn House, 49/51 Bedford Row, London WC1V 6RL

Any approach will be treated in the strictest confidence.

Michael Page Partnership

Recruitment Consultants
London Birmingham Manchester

GERMANY

SENIOR SOFTWARE PERSONNEL

We are an established systems house specialising in the rest time applications of micros and mini computers to process control communications and terminal based systems

Out German aubsidiary was formed in 1975 and has built up a solid quatomer base with industrial concerns. We are increasingly taking on total responsibility for major projects and we wish to recruit additional staff capable of working at project leader level. Applicante must have a everal years relevant experience and a working knowledge of the German language.

Projects on which we are working and where we have full software reaponability include:

Monitoring and control of the runway lighling system and the total energy

eupplies at a major European aliport

Software

Research and Development

PR1ME

Computer

Lecturer

Demonstrator/Senior Demonstrator

CLASSIFIED

ADVERTISING USE

DIRECT LINE

01-661-0121

works involving nine linked computers Development of interactive colour graphics and data acquisition systems for sublear power stations

(£003)

A micro processor driven rolling road control system for the German automobile industry.

We offer competitive salaries, a generous relocation package, intry days holiday per year, profit sharing, company car, and contributory medical insurance etc.

nterviews will be held in our Landon office or Neil Isembulio

Please soply to Roy Steemon DIGITAL APPLICATIONS INTERNATIONAL Grish. Herzogstrassa 81,6078 New-Jacoburg, Germany. phone no.: 08/02/38074:

DAI



Aluminium Bahrain (ALBA) is the major aluminium producer in the Arabian Gulf. Established in 1959, the company now employs some 2000 local and expairinte shift. Current major expansion creates

Programmers COBOL

£ negotiable-upwards of £10,000 net of tax + substantial benefits BAHRAIN

to make a significant contribution within a 2 year contract to the company's established central computer department. Set up In 1974, and now employing some 30 stall, the department is involved in the development of on-line systems on an IBM 4331.

Candidates should have a minimum of 3 years' COBOL experience, VSAM or CICS knowledge would be an advantege. Progrem development will be on-line using L.C.F. Salary, at present totally tax-free end freely transferable, will be negotiable in a five-ligure

eddition, substantial benefits include: 32 days' annual leave plus 12 days of

Public Hulblays * ront-free furnished air-conditioned bungelow* full recruitment and repatriation expenses * annual return air. fares for employee and family * assisted education for children's free madical cere and

Balirain is e steble country with e liberal govornment. English is widely spokenead tha company is experienced in the rapid and smooth entry of expetriale sleff into the local community. Extensive sports end social faciliiles exial.

Please write with full deleils to: K.W. Rowe, Alba Smelter Services Limited, 22 Grosvenor Street, London WIX 9FE.

We are still growing fast. Our product development plans for the 1980's call for highly-talented software designers, particularly with structured designersperience.

We are at the foreliont of prindict developmentable fields of networking, advanced communications, transaction processing, database, information processing software technology and system recovery techniques.

We would be pleased to hear from the following experienced people

> SYSTEMS PROGRAMMERS c.£0,000 p.a. 3 6 years experience.

ASSOCIATE PROGRAMMERS c.\$7,200 p.a. 1.3 years experience.

These are all first rate opportunities, not only for hose. wishing to spread their wings and take responsibility but also but those who want to work in an environment that rewards skill, effort and achievement.

Free III PA, generous relocation, pension scheme, fee life assumance and preferential company suck purchase plan are all partiolour comprehensive package:

If you have experience of a mini or mainframe systems environment and are hooking for career advancement, contact: Delible Teague on 0234-6512t or write to her at Prime Computer, Research Development, and Engineering, The Menon Centre, St Peter's Street, Bedford MK40 2PN.

Chief Operator

Digital piece great emphasie on continuous systems advancement.

The Europeen Software Engineering unit at our Reading location is responsible for the development of innovative new software for e wide.

veriety of commercial and industrial epplications worldwide.

The ever increasing workload within this expanding environment the Operations Manager and will exaums day-to-day responsibility for the efficient control of all computers, peripherals and operating shall. This will entell maintelning accurate usage records, pienning operating schedules and providing usars with sound technical edvice.

To make a positive contribution within this important, days only role, you'll need a flexible approach to the job, sound administrative abilities, good ell-round communicative shalls and man-management potential. In addition, a working knowledge of VAXVIMS telecomms and other manufacturers hardware would be a distinct advantage.

We ofter a high initial salary and a full range of valuable benefits. Naturally, success in this role will lead to carser development opportunities within our diverse organisation.

For more information, clease elephone Shells Newman on Reading (0734) 85131, ext. 283, or write to her for an application form at Digital Equipment Co. Ltd., Acre Road, Reading, Berke, Qualing ref. 148.

digital

AUStralia Salesmen and Systems Engineers

Senior EDP Opportunities with Fujitsu Ltd.

Fulltsu Ltd Is Japan's largest computer manufacturer with revenue in the last trading year exceeding US\$2 billion.

Fulltsu Ltd has been in existence as a company since 1935 and has been manufacturing computers since 1952. To date Fuj-Itsu has shipped over 40,000 computers, mainly within Japan but increasingly over the past skyears to countries outside Japan.

In1975, Fujitsu manufactured the first all LSI computer, the M190, (equivalent in power to an IBM 3033) and since that time Fujitsu has kept its technological lead in both performance and price over the major North American manufacturers.

·Fulltsu now manufactures a full range of advanced LSI mainframes from the M130 (about an IBM 4331) to the M200 Quad Processor, which at 28MIPS is the most poweful non vector processor available in the marketolace.

All these systems use highly sophisticated fulltsu developed operating systems. For the smaller systems there is F2, which is equivalent to a functionally enhanced DOS/VSE. from the M150 upwards there is F4, which offers the power and facilities of MVS without the complexity of operation or the sysiem overheads.

Facom Australia Limited

Facom Australia Ltd (FAL) was formed in June 1972 to market Fulltsu computers in Australia. Since that time the company has progressed steadily developing a customer base and building a professional marketng and support organisation.

Our success in achieving these objeclives can be measured in several ways, but some of the key reasons that we are winning an ever increasing share of the Australian market are:

Our reputation for reliability of hardware and software is such that we often confoct for 199% availability 42 of our 80 installations alid not record any down time in the last 6 months.

- Our prices are set to give us a price/performance edge over our competition.
- We meet very short lead times and supply high quality support services.

We now operate in all States and in New Zealand and employ over 400 people. Our customers Include Federal and State Government organisations, and some of the largest Corporations in Australia.

In the past sales year we sold over A\$40 million worth of 'M' Series computers includ-Ing an M200MP to the Federal Government which is the largest computer installation in Australia. We have also sold another 30-40 'M' series machines in all States.

In terms of hardware sales this means that FAL is becoming the second largest supplier of computers in Australia (behind IBM). It also means that we have many lob opportunities to offer to cover our explosive growth this past year to ensure that the momentum built up does not slow this year.

The Sales Opportunities **AS48K Upwards**

We require salesmen in all States but especially Melbourne and Wellington.

Experience

The successful applicant will have about 8 years in the mainframe business of which the first 50% would be in a technical role. with the last 50% in direct sales. He would be in his late 20's or early 30's and would be able to prove a stable domestic background and work history. He would also have a good scholastic and starting record.

Remuneration

In this sales year we anticipate all our salesmen will achieve their quotas. At this quota level, based on this years performance, an experienced salesman would earn A\$56,000.

Remuneration is split between the various tax free allowances, salary and commission and achievement of 100% of qual a earns a trip for the salesman and his wife/friend to the Facom Forum which is held in an oversecs location.

The Systems Engineering **Opportunities A\$25K Upwards**

Location

We require SE's in most States and in Auckland and Wellington.

Experience

The areas of expertise we are seeking Include • Operating System Support • Data Communication and Networking • Database • Project Management • Customer Education.

The people who will find it easiest to adapt to working with a FJ Hardware/Software environment would be those with comprehensive background in MVS or VSI systems. However, significant experience with other large systems such as Univac 1100 series would be appropriate.

It would be expected that successful applicants would have 8-10 years experi-ence in the industry with a high skill level in one or more of the above areas.

Remuneration

Will depend on the type and degree of previous experience but a package in the violnity of A\$27K to A\$30K should be taken as a guide.

Higher salaries would be offered to outstanding applicants. The salary package includes allowance covering car, business hospitality and telephone expenses.

Assistance with relocation costs to Australla and New Zealand will be negotiated with successful candidates.

Interviews will commence on 4/5 May.

Applications should, in the first instance, be made to Prescot Computers Limited. Prescot specialise in computer recruitment for Australia and are able to advise candidates on working and living conditions within Australia.

Please telephone: Chad Stolper or Anne Breuer on (01)-434 2698 or (01)-439 2626 or, if you prefer, write to:

Prescot Computers Limited

43 Condult Street, London WIR 9FB **Telephone: 01-434 2698. Telex: 298881.**

technical automation jobs in Holland

BSO offers you the opportunity to keep in touch with the latest developments in technical automation

Buro voor Systaem Ontwikkeling (BSO) is en Independent Dutch Holding Company consisting of three subsidiary companies, one

of which, BSO/Automation Technology BV, specialises in the field of technical and scientitic automation.

BSO/AT is currently engaged in various reeltima process control and monitoring systems using microprocessors and minicomputers. Typical projects in this lield ara:

- development of madical Computerized Tomography end imaging apparatus
- devalopment of computer systems tor satellile ground stallons
- development of a distributed autometic building security system
- development of a generalised aircraft simulation model
- -development of a 'message hendling' system for an industriel process control of dredging platforms.

BSO/Automation Technology itself consists of three staff groups: Softwara Technology, Systems Engineering and Cybernetics. From these groups project taams are formed, which are coordinated by project managers. Mambers of BSO hava varied backgrounds end axpertisa in a wide range of disciplines and share a number of common qualities:

- they have a university education or tha
- they are capable of working independently - They show a high degrae of initiative
- They are enthusiastic
- thay appreciate an informal atmosphere. the opportunities to grow with the company. the type of projects and their variety, and fast but not least - the salery and fringe benefits.

Wa would like to maat people with similar interests. We have for them the tollowing vecancias:

project leaders (up to £15,000)

For a number ot current and tutura projects. You should have experience in design and implamentation of real-tima industrial or scientific systems and at least 6 years experience in lechnical automation.

systems designers microprocessors (up to £14,000)

You will work in the cybernetics group and would be expected to discuss directly with clients their requirements for equipment, write proposals and design, develop and supervise tha implementation

You already have a good record of completed projects based on microprocessors and have demonstrated a planned approach in such developments. You have e good knowledge of assambler languages and at least one high level language (a.g. Pascal, Fortran, PL/M, Coral 66,

It is an advantage if you have, in addition to the abova, knowledge of data transmission end data collection techniquas.

specialist in distributed data bases

(up to £16,000)

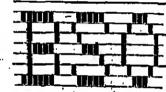
You are familiar with DBMS-software (Codasyl) and you have knowledge or axperience of the latest tachniques like conflict analysis, parallel searching. multisita quarles atc.

It is an advantage II you, in addition to the above. know about back-end or local networks.

Your job might be in Utrecht or at other locations in Holland. You will also have the opportunity, if you wish, to work for short or long periods on projects located outside the Netherlands. In addition to the saleries we offer e generous package of Iringe benefits including a relocation grant, company car, medical insuranca, pension,

If you went to know more about BSO or the vacancias described above, plaese pick up the phona and call Yvonne Weddell, the sacretary of BSO/UK, eny lime of the day or avening aftar April 12. She will be delighted to give you more Information and will organise interviews in UK or Holland with the staff of BSO/AT. You can reech har at the following address: BSO/UK, PO Box no. 5, Oxled RH 8 OUG, Surrey, lel. Oxled (08833)

You can also call (please reverse charges) our personnal managar, Robbert Schalakamp, lel. 010-31 30 946746. If you wish, you can send your application plus c.v. directly to him at the address



BSO/Automation Technology BV,

Koningin Wilhelminalaan 3, Postbus 3059, 3502 GB Utrecht; tel. 010-31 30 946746.

Systems Analyst

CROYDON, SURREY

£8Kto £10k

At South Eastern Gas we require on experienced, capable and creative Systems Analyst to take responsibility for mojor project work, developing on-line and mini-computer systems to meet the needs of a progressive modern energy industry.

Our hordware includes on IBM 3032 and an Aradahl 470/V7B. We also use CICS, VSAM and the Roscoe Program Development System.

So - If this is the kind of environment you ore seeking to further your career, can offer at least 2/3 years proven experience and are looking for the benefits expected from a major organisation, then you could be the right person for this lob.

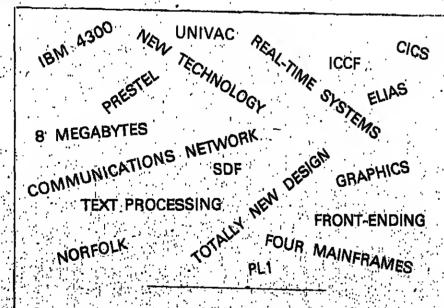
For further delails, please ring Ray Broughton on OI-688 4466; ext. 6002, or write, giving full details to the Personnel Manager, South Eastern Gas, Segos House, Kathonne Street Croydon, Surrey CR9 (JU.)
Quoting ref. Q/6783/CW.

SOUTH EASTERN GAS

Business Machines TECHNICIANS

Techniciens needed to instell and service screen based word processors, small besinese computers end other office machines for an instellation and servicing company based in Riyedh. Sortuses on ment. Single status allially. M/S later

C.Vs. quoting Ref: 36/SML/357, to F. J. Selleck. Associates, 17 North Hill, Colchester CO 1102. Telaphone: 0208 65252



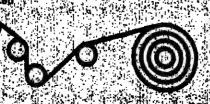
Systems Analyst

The successful applicant will be responsible for the design and control of major projects, and will join an exteting teem of professional ensigns. Candidates should have proven ability in existence ensigns including the successful design, implementation and support of the strong major system. Expediting of IBM 4300, or 370 series mechines, and reel-time systems would be an adventage.

We offer a competitive salary, good working conditions, lour weeks ennual holiday, a profit sharing bonus schema, parision and life essurance schemas, canteen and social blub facilities and generous assistance with relocation expenses where applicable

Application should be made in writing with full details to Personnel Officer Eastern Countles Newspapers Limited

Prospect: House Rouen Roed Narwich NR1 1RE Felephone Norwich (0503) 28311



COMPUTER SERVICES MANAGER

Experienced person required to take over small but expending DP department currently using Honeywell Level 62 mein frame, working mainly in an on line environment. The person will be required to plan, direct and co-ordinate the organization's data processing sarvice in accordance with the objectives ield down by the Board. The company is in an interesting stage of expension and real opportunities exist for the right person, Salery by negotiallon, company car, contributory pension scheme are included in a generous package.

Please reply in the first instance with full C.V. marking the envelope 'Private & Contidential' to the General Manager et:

Combridge Jackson Limited



Bayliss House Hurst Street rminghem 85 48T

AM TASK FORCE LTD.

W. LONDON + MIDLANDS PROGRAMMERS: IBM 3790 (or 8100) DPCX and MACRO ASSEMBLER ABU DHABI

SENIOR PROGRAMMERS **Victoria**

- ★ To become involved in "State of the Art" development using fully conversational IMS DB/DC
- ★ 2 years' plus experience in COBOL with some CICS/DL1 or IMS

FACILITIES MANAGEMENT BUSINESS SYSTEMS. CONTRACT STAFF SUPPORT RECRUITMENT CONSULTANCY SOFTWARE PACKAGES COMPUTER SECURITY RECRUITMENT ADVERTISING FACILITIES MANAGEMENT CONTRACT STAFF SUPPORT RECRUITMENT CONSULTANCY BUSINESS SYSTEMS SOFTWARE PACKAGES

c £9,000 * A first-class Multinational Company with excellent working environment, benefits and pros-

* Candidates with some Supervisory experience will be shown preference.

Totally negotiable

CHIEF PROGRAMMER

Central London

to £12K

★ 8/7 yeers' COBOL Programming — UNIVAC sxp preferred
★ To take part in Oetebasa applications
★ High degree of responsibility
★ Excellent banafits as expected of major company
Ref: PJ 81270

CONSULTANTS, ANALYST PRO-GRAMMERS & PROGRAMMERS HP 3000

Middx, Herts, City & Beds Max £13K + Car

REAL TIME SYSTEMS PROFESSIONALS

London, Berks, Sussex, Hants & Pounds Unlimited

- ★ To davelop Communications Systam & Operet-
- ★ Praterably experience of PDPs or Micros, Telatax, Viawdats.
- ★ Excaliant Companies, Perks and Prospects ★ PASCAL is a Plus

Rel: PJ 80206

(2) 0(4383857I)

Open until et least 8 p.m. every evening

PROGRAMMER. SENIOR PRO-**GRAMMER, ANALYST, PROJECT** LEADER

Salaries to £13K-Negotiable

- ★ Teem of 6 people
 ★ To deelgn and implement Systems based on CICS/DL1 end DPPX
 ★ New 4300/8100 Combination Ref: PJ 81278

SYSTEMS PROGRAMMERS London, Essex, Herts, Surrey

- ★ DOS, OS, MVS ★ Junior, Medium & Heevyweight
- * 1 particular job to halp support IBM related pro-

Computer services
Hoxegon Heigen 148Wardour Strage Landon W1V.3TB

International Technical Computer

Services Manager (£20,000) The position consists of managing a staff group of computer specialists, that provide technical support services in the following areas:

- Burroughs large system computers
 IBM 4300 computers
- Datapoint minicomputers
- Operating system software Database software
- Telecommunications
- Technical utility programming User consultation and training

The ideal condidates, male or female, would have a university degree and be self-motivated

This multinational company has a leading position in the This multinational company has a leading position in the Birosean nead office in Brussels has a dual-processor B 7000 and controts a growing network of mair computers and IBM 4300 in several European countries and interfaces with a similar system in its theadquarters in California.

The starting salaries and image benefits (such as proli) sharing) are commensurate with high levels of ability. Removal expenses will be paid by the company.

SUPPORT ENGINEER

Are you an experienced engineer - male or female - with an in-depth knowledge of

microcomputers and associated peripherals?

De you elso have experience of supporting

software written in the prime software (anguages) And would you be prepared to travel overseas?

Then we would like to hear from you. We are the European subsidiary of an established international company dealing in a wide range of computer equipment and peripherals, and we reed a self-starter preferably with a computer-relevant degree or HND to we offer.

We after an attractive salary package in line with experience and ability, which includes all the tenants you would expect from a progression from a progression of pour less you could meet the less write with brief career details to sure.

Burroughs Computer Systems Specialist (£16,000)

Self-motivated database and operating systems technical specialist with experience in the following areas:

- Large systems Burroughs computers
- (B 6000/B 7000)

 MCP and BDMS II software
- Algol and Cobol programming languages
 CANDE and telecommunications

The individual we seek will have at least five years' experience in Burroughs computing systems at the operating system level.

Contact F.W. tn London: 01-38B 0036 Contact D.G. In Brussels: 02-653 2702



Euroserve

International Consultants The Studio 28 Paddenswick Rd London WB

COMPUTER STAFF

Looking for a job but can't spare the time?

London on a fool's errand, if you are looking for a new position just give us a call end we will honestly tell you what we heve available.

in the event that there is nothing currently suitable, we are quite happy to keep you intermed of developments by telephone.

For further details conlect: Barbare Basquill on: 01-836 6776

EXCEPTIONAL EUROPEAN

A mejor multinational corporation is seeking high-calibre personnel to expand its eyelem studies group based in France at Orisans.

THE SYSTEMS STUDIES GROUP is involved in COMPUTER DEVELOPMENT PROJECTS ecross a wide specifium of company activities — management, production, menulacturing, proceed control, merketing and office, applications. Herdwere is IBM 4341 and 370 using MVS and CICS.

SENIOR SYSTEMS CONSULTANT

The primery roles are to participals in and edvice on overall system alralegy together with company management and to accept responsibility for overseling the implementation of pertiouser projects. Education to Honours degree level plus at least 4 years of solid experience on IBM equipment including CICS and SAL environments is seegnital. Knowledge of the French lenguage is mandatory. SYSTEMS PROGRAMMER

Requirements are to be responsible for the development of programs within a system end to setablish and maintain successful listson between users and the development team. A very minimum of 2 years 10M experience with OS/NS1/MVS, Otcs and BAL-is ossential logariter with a sound working knowledge of French.

5. Various other SENIOR PROJECT MANAGER AND PROJECT MANAGER VACANC/BS EXIST relating to the development of elendard commercial applications e.g. atock control financial control in-house timesharing systems etc. Applicants should have IBM, TSO, VSPC, APL and BASIC experience, Spoken French is essential.

At C.P.I. we don't believe in bringing people to

Computer Personnel International

OPPORTUNITIES

pplications are invited from experienced and mature individuals for the illowing positions.

S. PROJECT LEADER — PROCUCTION

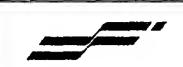
The project leader must esselet in the organisation of computer applications within the manufacturing process involving both menegement information systems and process control. Factory control systems built up from process control networks are to be implemented using mint computer systems. Candidates should be advocted to engineering degree leval, have production menagement saparisance and a good knowledge of mini computer systems. Knowledge of frod Industry processing would be an edded advantage. Knowledge of French language assentiat.

A: PROJECT LEADER — PERSONAL COMPUTING
The project leader must develop both strategy and techniques for the introduction of information systems throughout the verticus departments of the company. He will shaure that correct interfaces are established between departments and systems in accordance with the management strategy plenning. He will have a good knowledge of APL, PASCAL, BASIC or FORTRAN and possess the ability to communicate his ideas clearly and diplomatically. Tasching and instruction of user department staff will also be his responsibility. Knowledge of French is essentiat.

Appropries (Control of the Part of the Control of t

Forthcoming contracts for Programmars

AM TASK FORCE LTD. 44 Kingaway, Stoke-on-Trant Tel: 0782 410217



ARE YOU SELLING MICROCOMPUTERS?

One of Britain's top 20 companies, already well-established computer-users in six mullinational groups, seeks another two successful sales people for its informationsystems subsidiary in Middlesex.

The Company recently acquired sole UK marketing righle for a range of Z-80 based business microcomputers with full CP/M ectiware capability as well as viewdata and networking and communications

SE and SW Territories Unrestricted Earnings

These positions offer a car, BUPA, expenses paid, four weeks holiday, pension plan and product training. The Company is prepared to discuss assistance with reocation costs. Excellent technical sales eupport, continuous product development and substantial ireedom of action also combine to maximise your success.

Interested applicants should write with full career details to:

Robert G. J. Wood, SISCO LIMITED.

97 Portsmouth Road, Guildford, Surrey, GU2 5DL. Tel: Gulldtord (0483) 34561

> CLASSIFIED DIRECT LINE 01-661 0121

Database work in Britain's Oil Industry

One of the largest participants in North Sea oil exploration and production, BNOC is also recognised for advanced thinking on the application of

computers to its many activities. Major dotobase system developments are now being pursued, further extending an already demanding and varied workload, on large IBM mainframe equipment supported by a network of HP3000s. There are a number of key posts to be

filled in Glasgow by Systems Analysts with degree ar equivalent. You should have a programming background ond experience of database design ond implementation, using a proprietory DBMS and data analysis techniques.

Knowledge of one or more of the following would

be on odvantage: data dictionary, IDMS, RAMIS/FOCUS.

Working in BNOC offers great scape for personal fulfilment and career development, ond we provide appropriate training where necessary.

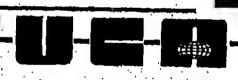
The salory/benefits package, including generous assistance with any relocation, is structured to attract people of exceptional

For details and application farm, which should reach us by 24 April, please write or telephone quoting ref KM/CW to: Ken Mearchent,

Divisional Personnel Officer, The British National Oil Corporation, 150 St. Vincent Street,

Glosgaw G2 5LJ. Tel: 041-226 5555.

Share in a better Britain



INTERNATIONAL SYSTEMS ANALYST

A large company eliueted in Middlesex is tooking for a Systems Analyst who would like to travel abroad for short periods. The applicant will have a minimum of 1 year's experience of COBOL programming and 1 year's eystems analysis, and an NCR background is desirable, if you have the above qualifications and enjoy international travel, then ring us now for further details.

If you ere an experienced Systems Programmer 12 years+) with a working knowledge of some of the following: OS, MVS, CICS, VTAM etc. Then you could be the right person for the above position. This company offers excellent company benefits in addition to a nice setlery, so ring now for further details.

PROJECT LEADER

IBM SYSTEMS PROGRAMMER

CW 15/2 TRICIA

c. £11,000 experience of IBM PL/1 (or involvement in large project systems de velopment. The hardware is 370 under DOS/POWER/VS. Company banefits include a non-CPS if your experience is relevant contact us now to turiner details. (nior Lacturer – C8,062 C11,295

CW 15/3 TRICIA

CONTRACT ANALYST/PROGRAMMERS WANTED

CIGS COROL DL/I CIGS OS PL/I CIGS ASS MARK IV OS OR DOS SYS 34 RPU II COBOL EXECS CICS DESIDNER

PHONE MICHAEL FOR DETAILS



Hegyulimant Compulsants
Universal Computer Autoclates Limited
Data Express House,
1-995 3883 Prospect Place London W4 388

POLYTECHNIC PARTMENT OF COMPUTING Lecturers and

Senior Lecturers in Computing

Further, datalis and application, forms, from the Rendmin Office? Brighton Polyteohale, Moulea's coomb, Brighton, 847, 487, Tel, Brighton, 65,565 Em, 25,77 ligeing date three weeks efter publi

CONTRACT PROGRAMMER

Finonths+ Central Landon Must have in perfence of CRS at command level plus good Cobol and approciation of OS To start beginning of May, pre-stoly sariler.

EUROPEAN DATA PROCESSING CONSULTANT/ ADVISER SURREY/HANTS BORDER C £15,000 p.a

C. £15,000 p.a.

Above-average multinational in household and industrial consumables are seeking a personal consumable and industrial consumable. sumables are seeking a person capable of thriving in an environment whose success is based on open discussion and team

This position will involve the co-ordination and planning of all computer-related activities in several associated com-panies. Accordingly, considerable travel throughout Europe is necessary in order to carry out this job successfully. As a consultant/adviser you will work very closely with both senior management and project teams to ensure that the system needs are met in the companies for which you are responsible. Familiarity with the following areas is necessary:

Communications

Commercial Business Systems...

Minicomputers Systems Analysis/Design

• Project Management People monivators are most likely to be the achievers in this environment, and will enjoy the rewards from a company geared to recognise individuals committed to developing their

Recruiting on behalf of clients, we will be pleased to exchange information confidentially by telephone and personal meeting. Please ring, quoting reference 406, or write briefly (messages recorded after hours).

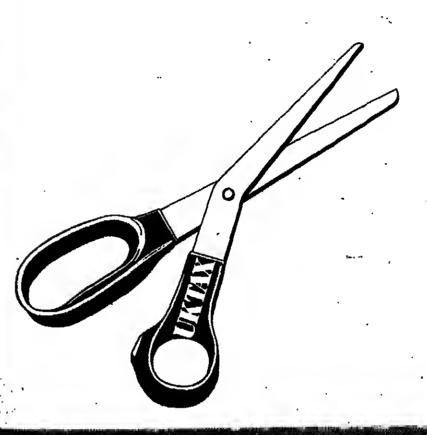
DEDP SYSTEMS 01.637 52-53 Margaret St. London WIN 7FF 5796



Specialists since 1971 in UK and International computer and technical appointments.

OCC Computer Personnel (Northern) Ltd 5 Hospital Street Nantwich Cheshire CW5 5RH Tel. Nantwich (0270) 627 206/24 hours. Telex 367258

In Kuwait you keep all you earn...



IBM DOS/VSE Systems Programmers-As Section Managers in Kuwait youcanearn .

£16,000 tax free, on married status!

(to net this figure in the UK you would need to gross at least £25,000)

The positions, with The Commercial Bank of Kuwait, are permanent on a 2 year renewable basis, with excellent working and living

In addition the Bank provides free fully furnished accommodation, generous relocation allowances, annual return flights home and a contribution towards the private education of children. Also, the cost of living is now cheaper than in the UK.

The Bank is undertaking a major expansion and development programme, involving the imminent installation of an IBM 4341, together with associated software and over 200 IBM 3600 terminals.

For this, two key systems managers are needed — Section Manager (Data Comms), Section Manager (Operating Systems).

For both these positions you will need a solid systems programming background of at least six years in a DOS/VS or DOS/VSE environment. For the operating systems position, a good knowledge of DOS under VM/370 would be useful. Whilst for the data comms. position, solid exposure to a CICS or CICS/VS system is mandatory. We also require CICS Applications Programmers, with at least three years' experience, who have a good knowledge of Assembler and CICS at MACRO level. The same conditions as above. Salaries to

Contact Brian Harris on the above number (daytime). Or on 027074 438 (evenings/weekends).

HP 3000 on Line Design Liverpool

We are responsible for the UK manufacture of Glaxo pharmacouticels and

The Company is engaged in the implementation of a farge network of Hewlett Packard 3000 minicomputers involving all Company locations. There is a major development programme of advanced on line systems mainly in the production planning and recording, inventory control and quality control areas.

Our Speke installation currently operates an HP 3000 series III computer with 30 user terminels and this configuration will increase considerably as development continues. We now require Analysti Programmers to carry out System design and programming and to support the expansion in activity which is planned.

Applicants should have a sound COBOL programming background and be ready to accept the additional responsibilities of user lielson and systems design/templementation. Experience in the above mentioned cross of Company operations would be an odventoge. Knowledge of on line programming and data base techniques would also be on advantage although training in the relevent HP Software will be provided as

Career prospects are excellent and in addition to a good starting salary there are attractive conditions of employment including flexible working hours, Company Bonus Scheme, non-contributory Pension Scheme and assistance with relocation expenses. The factory is distance of pleasant residential areas in Cheshire and the Wirra).

Please write for an application form to: Mr. G. Sallsbury, Personnel Manager, Glaxo Operations UK Limited, Speke Boulevard, Speke, Liverpool L249JD. Or telephono: (051) 458 1881, qualing reference; FYI 173.

INTERVIEWER

LAXO OPERATIONS

shall specialist consultancy curlier Object Prospective candidates will
be to three years' agency experience
able to work without supervision
the Distinguage contact

SETHEN DOPSON, DT. 823 010

A CONTRACTOR OF THE CONTRACTOR

PROGRAMMERIN MUNICH

If you have experience of Zilog products and want to live South of Munich, please write of phone lot an interview in London in early May

Littler Ulbrich
Littler Automation GM8H
Breatauer Weg 37
D = 8192 Gereterled
West Germeny
Plione 01049 817/13013

TORONTO, CANADA **COMPUTER CONSULTANCY Programmers**

2½ - 3 years COBOL. Experience of IBM mainframe and/or Honeywell, DEC, or HP minis preferred.

Interviews will be held in Liverpool week commencing · 4th May 1981.

Apply in the first instance to:
Ray Mount, Fraser Williams Group Ltd.,
Port of Liverpool Building, Pier Head, Liverpool L3 1BY.
Telephone: 051 227 3371.

Computer Consultants

LONDON ST ALBANS LIVERPOOL LEEDS MANCHESTER POYNTON BIRMINGHAM

LIVERPOOL POLYTECHNIC COMPUTER SERVICES DEPARTMENT

PROGRAMMER £5,952-£6,750 per annum

A new computer system is being installed during the euromer to provide installed provide installed for all Polytechnic departments. The new computer system has being 1803A batch system.

The Polyachric's Controller Services Department was created lines over 18 months ago and stating levels within the department on the programming side are minimal. The successful application with the expected to play a major rule in the installation of the system and the establishment of an effective computing expices for the Polytacinic.

mes DACANCE OFFERS A UNIQUE OFFORTUNITY TO BE INVOLVED AT THE BLATTOPA MAJOR DEVELOPMENT PROGRAMME,

Applications are invited trops pandidates who have, as increat to obtain a larges in Computer School For further particulars and application form, contact, the Presonnel Office, Liverpoil Polytopholo, Richery House, 70 Hours financial, Liverpoil Li Sulv. Tel. 164, 700 apple that et al. informed details may be obtained train members of the Computer Services Designation by triping 061-207, 2007 Ext. 128

COMPUTERS IN THE CURRICULUM

CHELSEA COLLEGE

PROGRAMMER

to be involved in the loterios of development of Compluter Assetted learning software in BASIC for a large range of micro and main-burne, computers. Experience of computing (or a variety of computing the would be an advanted).

The post is initially for one year commencing as agen as possible after 31et March 1981. Salary within the range 0.5.505-0.845 isolarly solles under review) plus 1987 London Abovance septicing to quellifications also superissoned it may be polyble to obtain secondment from as 150.

The second secon

BOSTON, NEW ENGLAND

Our clients, the Stop & Shop Companies Inc., are a diversified retailing group operating a total of 352 supermarkets, discount department stores, drug stores and tobacco shops throughout New England, New York, New Jersey and Virginia.

These career positions are located at their Boston, Mass., headquarters where they utilise 3 x 370/158s under MVS and are totally dedicated to developing an IMS/RAMIS on-line environment. Cobol is the main language and all work will be on the development of new on-line systems, including a major Point-of-Sale project.

SENIOR PROGRAMMER/ANALYSTS \$25,000-\$28,000

A minimum of four years' D.P. experience is required with fluency in Cobol and an understanding of JCL. Successful candidates for these positions are considered to be the mainstay of a computer development project and will carry most of the first-line analytical and technical responsibilities for the majority of project phases.

Our clients will be interviewing for these positions in early May so please telephone immediately or write to E. J. Rhodes Associates, c/o CRS, 18 Buckingham Palace Road, London, S.W.1. Telephone number 01-828 1384.





THE SECOND LONDON COMPUTER

APRIL 14th 15th & 16th 1981 10am-6pm

Including Retail Exhibitors - Hobbyists Glub Stands - Seminars - Workshops Bring and Buy Sale

Admission 75p

POLYTECHNIC OF NORTH LONDON THEATRE

Opposite Holloway Rd tube station O

SPONSORED BY EDUCATIONAL COMPLITING and



Province and the second THE MOTOR INDUSTRY RESEARCH ASSOCIATION

require a SCIENTIFIC PROGRAMMER

Programmers

BIGGLESWADE £5,500-£8,500 plus bonus

We are looking for people with a minimum of 1 year's proven programming experience preferably in one of the following

★ ICL 1500 BTL ANY M/C ASSEMBLER

All successful applicants will demonstrate that they have the potential to develop their own skills and the more experienced applicants must be able to work with the minimum of supervision whilst providing assistance to other programming staff.

BECOME PART OF OUR SUCCESS STORY

PICK UP THE TELEPHONE NOW

Contact either: Alan Jephcote or Bill Brett, Lloyds Bank House, 39 High Street Biggleswade, Beds. Telephone (0767) 316286

MV5 Systems Programming

Netherlands c.£2,100/month

consultants providing toeimical support to an expanding Data Centre in the Natherlands. The successful applicant will be assigned to a small MVS group where in addition to normal implementation and maintenance duties responsible lities will include both assisting the Head of the Group with the planning of new releases and providing technical support to junior members of the team. The Centre comprises multiple 303X cpu's running MVS 3.8 SE II ISP planned supporting a large network of remote terminels through such lecities as JES2 RJE, ACF, TSO, VSPC, IMS/VS and VM/CMS.

DOS/VSE Support

Holland

c.£2,000 /month

We require an experienced Systems Programmer to undertake an open-ended assignment (min. 6 months) in the Netherlands, Our slient is running an IBM 4341 with DOS/V8E rel. 2 under VM supporting CICS/V8 and DL1. The successful applicant will be responsible for all systems programming applicant the installation including planning, implementation, maintenance and the provision of technical support to applications staff. Candidates must therefore be expetile of working on their own initiative and have at least 3 years systems programming

TP Support-Shadow II

Holland

c. £2,000/month

We are seeking e TP Systems Programmer to support Varsion 3.0 of Shadow running a network of over 100 local and remote terminals. As well as supporting the operational TP system, duties will include installing Shadow on a new 4341, and involvement in an upgrada from BTAM to ACF/VTAM. Applicants should be capable of providing technical advice to development groups as well as undertaking the usual system support tasks,

IMS Technical Support

Holland

c.£1,900/month

We are seeking a technically oriented Analyst Programmer to work with a small distribution system based on a centralised IMS Database, Dutles will include the provision of IMS technical support to the group as well as the design and mplementation of enhancements to improve system stillclency, in addition to e thorough knowledge of IMS DB/DC candidates should have Cobol experience and a knowledge of assembler would be an additional advantage.

VM Implementation

Amsterdam c.£2,000/month

Wn are seeking an experienced Systems Programmer to Implement VM/SP et an OS/VS1 installation in the Netherlands, VM will be run both 4341, with the operational V\$1 system as a virtual machine, and on other 4341's to support graphics terminals using the CADAM package under CMS. Applicants should have a good all-round knowledge of VM, and must be prepared to take on all tasks associated with installing VM/SP in both these environments.

CDS is a 45 strong Augio Swise Consultancy specialising in the following areas:

• Systems Programming — MVS, VS1, VM, DOSIVSE), ACF, IMS/VS; CICS/VS.

• DE/DC Application Development — Particularly IMS DB/DC, DL1 & CICS.

For further details of the above positions or for an informal discussion on future Furapsen or UK essignments please contact of at our UK offices of an our private furapsen or UK essignments please contact of at our UK offices of pin our private numbers at evenings/weekends. Edgn Bioston 03446-5385 or Jim Shaw 0890-2454



The IBM System Software Specialists

SDS Ltd, 67-73 Park Street, Comberley, Surrey GU15 1PF. Tel. 0276 26845 Triale 8580

[[]GIST|X In Informatics

Packet Switching

Paris: Salary to £15K

A French National Communications and Network Company is seeking several French speaking Packet Switching Professionals. You will be expected to be fully familiar with packet switching techniques, prutocolling, data communications and modern/multiplesor interfacing. Of special interest will be candidates with experience of system implementations with experience of system implementations. This interviews will be held in London after which shortlisted candidates will visit Paris for final selection.

Recruitment

R/T Software Designers

Home Counties: Salaries to £12K

Software Designers with at least two years' especience of real-time systems development ure urgently required for the Development Department of a leading systems supplier. All the software used in their products is developed in-house thus providing an extremely broad range of projects for successful applicants. Of portientar interest will be candidates with expertise in one or more of the

CAD/CAM Systems

Thames Valley: Salary to £14K

A leading supplier of CAD/CAM Graphics Systems is seeking Senior Applications Consultants and Systems Programmers. The Company's European Hendquarters are based within minutes drive of estensive rail, molorway and airport facilities, Successful cendidates must offer recent or current involvement in one or more of the following areas:— pre-sales fensibility studies; post-sales graphics support; advice to first-time

supplier of CAD/CAM Graphics users on installation problems anti/or training of designers and drughtsmen in CAD/CAM techniques. Certain positions involve a degree of mobility and will carry a ent or car allowance. In addition to an ubove average salary the Company offers an extensive range of valunble henefits inchiding a profit share scheme, Where necessary, relocation assistance will be given.

IBM Programmers

Holland: Salaries to £12K

Applications Programmers are sought by the European Headquarters of an oil service company, situated in West Netherlands, Fluency in IBM COBOL is essential whilst additional skills in PL/I or BAL are much appreciated. Sulfiable candidates must be fully familiar with Structured Programming ischniques used in a multi- or large-scale IBM environment. Of particular interest will

Pascal Programmers

London & Home Counties: Salary to £10K

A leading supplier of microprocessor development systems has an urgent requirement for Programmers to participate in its advanced compiler development project. Whilst our client has a strong preference for respondents with a knowledge of PASCAL, candidates fluent in any technically orientated high level language are encouraged to apply. It is essential for all appli-

eants to demonstrate a knowledge of Structured Programming techniques and to have worked on mini or micro computer based systems. These vacancies will strongly appeal to indented, career-minded individuals wishing to enhance their technical skills in one of the most challenging areas of the data processing industry.

Financial Applications

Berkshire: Salary to £13K + Car

Our client is of U.S. parentage having its years and possess an outgoing personality Headquarters close to extensive motorway since these positions entail a large annount of user contact at help, Bourd unt technician user contact at help, Bourd unt technician user contact at help, Bourd unt technician systems the Company is now seeking additional Financial Analysis and Designers to act Stockbroking or Accounting environment in both pre- and post-sales environments with a large-scale IBM user in Systems where analytical design skills are essential.

Banking Consultants

City: Salaries to £16K

One of Burcipe's leading independent Systems and Software Houses is correctly seeking Consultants for its City-based Banking Division. Suitable candidates will be graduates with a minimum of 5 years banking and/or financial experience gained in either a commercial, merchant banking. The London area but occasional overseas stockbooking or investment orientated environment. It is essential for oil applicants to Refs LIISIG.

Logistix, 10 Grenville Place London SW7 4RW



Eighteen months +

As one of the most successful companies of our kind, servicing the financial world, we are only too aware of the importance of an individual's technical skills in a complex business area.

A current vacancy represents a considerable challenge to an enthusiastic and career minded individual wishing to join a dynamic and expanding Systems Programming Group.

You should ideally have a minimum of eighteen months' DOS/VS systems programming experience, and be capable of developing/ maintaining both systems software and applications support middleware.

Our mainframe hardware currently comprises a loosely-coupled IBM 4341-370/148 configuration, running under VSE, VSE/POWER, CICS/VS, VSE/VSAM using VOLLIE for both development and applications support.

Our rapidly expanding international communications network will be controlled by IBM Series 1's and the successful applicant could be offered the opportunity to develop their expertise in this new and exciting area.

Interested? If so contact our Advising Consultant Brian Jones on 01-935 0671 or Chelmsford (0245) 466853 (evenings & weekends).

Landon 01-935 0871 3 Mendeville Place, Wigmore Street, London W1M 5LB. Birmingham 021-236 3781 35-37 Great Cherles Street, Queensway, Birmingham B3 3JY. Menchester 061-B33 0427 Bleckfriers House, Tha Parsonage, Manchester M3 2JA. Brussels 910 322-840 7151/71 Avenua Louise 327, Bolte 4, 1050 Bruxelles. Amsterdam 010 3120-780947 Willemsperkweg 92, 1071 H.M. Ainsterdem.

SA

Specialist Computer Recruitment Ltd Support/Development Staff **Manchester and London** PACKAGE UP TO £16,000 Pansophic Systems (UK) Ltd. PANVALET, PANEXEC, PANAUDIT requires more technical staff to and PANRISK exceeded £1M in support its continued expansion。 the UK last year and our current plans are very ambitious. 🧀 The sales of our systems soft-If you have good knowledge of our products or OS, MVs

or DOS/VSE experience and you want to be involved in pre-sales and post-sales support, we need you.

... The career prospects in our organisation exceptional.

For further details please contact: MALCOLM CHADWICK or BOB DAVIES

PANSOPHIC Systems (UK) Ltd. - Alpha House

Wythenshawe, lanchester M22 5RC -_%:061-436 1415

Technical Instructors

Reviers operates a camplex ronge of Information services to business and the media throughout the world. Our systems utilise the most sophisticated technology ovallable and this places great importance on effective training methods.

To strengthen our existing learn we are currently looking for additional technical instructors to help provide the training required by our technicions and engineers worldwide. An inlimate knowledge al ony mini or moinfrome computer and mochine code is essential. Our equipment is principally on-line PDPB's and Il's.

ideally opplicants will be qualified to HNC electronics or equivalent, and will have the initiative and ability to prepare and present technical courses which range from functional block diagram to component level of detail. An Instructional techniques course is attended by all new instructors.

Reviers has ocitieved a reputation for profitable growth and has a real commitment to continual development which tagether provide a highly chollenging and rewarding working environment with excellent long term prospects.

We can offer a competitive solary and benefits pockage which will interest those currently soming oround £9000 p.o.

You can discuss all we have to offer by contacting Rod Levin on 01-353 7649, or write for on: opplication form to:

> Restuitment Manager RECTERS 85 Plet Sheet Landon Elif 417

- These positions are open to men and a winen

UNIVERSITY OF ESSEX

LECTURER IN THE DEPARTMENT OF ELECTRICAL ENGINEERING SCIENCE

Applications are invited for the post of lecturer Issiery ecosic E5505-E11575, under review) in the above Department, for appointment from 1 October 1981, in the area of Digital and COM-PUTER SYSTEMS. Candidates should have an horiouts degree, and relevent experience in some branch of computer engineering or computer systems. Applicants with all dound ability in computer systems, department in microprocessor systems, domain those within special interest in microprocessor systems, domain these of programming languages and symbol special property. The Department of Electrical Engineering Science Appendities in section of the systems, institute in the systems. Institute in the systems of Electrical Engineering Science Appendities in the systems, institute institution, computer sided design, increprocessor applications in her research interests in telecommunication systems, institute institution computer systems.

Applications in the copies, including conticutor yitles and the narries and address of two referees, should reach the register CDA (ACA/AO/CM), University of Essex, Wiverhoe Park, Cockissier CDA (SOC) from woom list for particulars may be obtained, by 24 Apolitics.

A European Law Centre Service

DATABASE MANAGER

This is a responsible position for in ratioble conscientious person with plenty
of injustive. The successful applicant will be working on an impoder(or with
of injustive. The successful applicant will be working on an impoder(or with
replayed service so knowledge of a major replayed software package such as
TRATUS or STARIS would be of value. A good understanding of compatiagainst a necessary; programming expectance on text processing applica-

STATUS or STAIRS would be of value, a good understanding of comparisons in nacessary: programming experience on text processing appearations in nacessary: programming experience on text processing appearations would be an advantage.

The post will cover, the following functions: (a) to generally easist the Database Chrectur in the production of on time text detainates; (b) to overse the text processing of source data to incorporation in the deathers; (c) they to day processing of source data to incorporation in the deathers; (c) to tout the text production of delabouse; (d) to take him at responsibility for the oasis, involved in the advance; (d) the text in the responsibility of the oasis, involved and accuracy of the trainbease; (a) to devise procedures and programmes for the decaption of the trainbease; (a) to devise procedures and programmes for the decaption of the trainbease; (a) to devise procedures and programmes for the security of the decaption of the

BANKING/TECHNICAL CONSULTANTS London based. £12-£18,000 + good benefits

This subsidiary of a targo group provides a specialist international banking service for clients in the U.K., Europe and USA. The company is one of the largest, longest established independent computer services organizations in Europe. They now wish to recruit several consultents in the banking and technical field. Applicants should possess at least 5-8 years' practicel OP experience with the ability to program in at least one commercial programming lenguage. They must be willing to travel, and work in the U.K. and oversee. In addition, as the job titles imply, they must have relevant banking and technical experience.

The company provides a first-class bonelite package in addition to a substantial basic selery.

CONSULTANTS. Middlesex £8-£17,000 + good benefits

Rise to the challenge of meeting strict deadlines and at participating in the sales effort of this leading European software house by offering a minimum of three years' commercial accounting applications preferable) experience and an in-depth knowledge of a high-level lenguage. You will be interested in extending your general computing expertise and ability to solve business problems for a wide client base. Contact Anne Powell.

INTERNATIONAL SYSTEMS ANALYST Middlesex. Up to £10,500

Besed to the UK, you will travel to Europe to edvice on end implement new systems. Eliactive communications skills, at local 2 years' IP experience, comprising 12 months' COSOL program-ming with 12 months' snelysis and preferably a knowledge of NCR equipment, will lit you for this challenging position. Contect Anne Powoll.

ANALYST/PROGRAMMER Herts. £ negotiable

A small, friendly coltwore house apaciclising in packages for commercial applications, requires several Analyst/Programmers to work on the development and maintenance of new and existing systems. Applicants should have experience at RPGII using IBM GSO equipment; especially System 34. If you are self-mutivated and lied up with being just a cog in a wheel, telephone Tony Steples who can provide temper line and lied up with being just a cog in a wheel, telephone Tony Steples who can

PROGRAMMERS Middlesex, N.W. London. Up to £9,000

We have verted requirements for programmers, predominantly ISM, UNIVAC & ICL COBOL in the above area and surridunds. Many of the positions have added interest by way of systems design or analysis lively want and relevant experience, in addition to programming, is most welcome. Why not call Anno Powell to discuss in more detail.

ANALYST/PROGRAMMERS S.E. London. £10,000 + benefits (Half-year reviews)

A well-known service burget has established specialised data processing services to charities, prolessing firms, mail users and other industrial and commercial clients since 1994. The rapid development of these services has involved the growth of a modern OP instillation based on powerful maintierns, minimum end micro computers. Analyst/Programmers are required in the DEC and I8M groups, to contribute to the ongoing expension. Applicants stroud have 2 years minimum expensions of BASIC + for POP 11 in commarcial applications or two years 18M COBOL (Assembler and/or MK IV knowledge would be useful).

Contact Tony Steples.

ANALYST/PROGRAMMER Berkshire. Up to £8,500

There is an unward carear opportunity with our client, a centrally located prestige organisation having the latest IBM configuration and planning a major upgrade next year.

A well quelified, determined person able to certimunicate well and work to high etendands is required for the European support centre to assist in the development/implementation of order proceeding systems and future enhancements, in addition to SW house felicon and European systems support. Essential experience is 2 years minimum COOL: and systems responsibility in a small 370 DOS environment; 4300 an-line systems design experience is a definite adventage.

Contact Steva Fention.

			,		(4926)
Please cor	nplete this	coupon a	nd return	(no stamp	needed) to
OCC, 16 E Name	edford Rov	v, FREEP	OST, Lond	on WCIR 4	DR,
Address					e per la proprié de la company. Ou set en la company de la
					A ST
Phone No	s: home vids brist	latella of a	vnerience		
required (Inote any o	i the abov	e if applica	ble).	
	4, 11, 1				
			F	基本学生实	

OCC Computer Personnel 01-242 9356



24 hours answering service

Minicomputer Software Designers Beds. - London - S. Coast £9,000 - £12,000

Three different clients, each espanding, each with their own special needs. If your exparience is in operating systems, communications, packet switching, real time applications, avionics etc., and you have an appropriate academic qualification, why not call me to talk prospects? You will be pleasantly surprised at the variety of state-of-the-art projects in 'blue-chip' companies. Excellent benefits.

Micro/Electronics Design Engineers West Country and Middlesex £9,000 - £12,000

Another three clients (different from the above). Again, requirements are created by expaneion. Common requirements are degree leval electronics, digital circuit design and micro programming esperience. Application areas include electronic P.O.S., word processing, photo-typesetting, hotel systems, special interfaces. Excellent long term career moves.

PDP11 Systems Programmers

Starting to £9,500 Reading and London

Three further clients (different from the above ejs), each in vary different epplication areas. Common requirements RSX11/MACRO-11 experience and appropriate academic quelifications. Additionally, LS1/11, Z80 and 8048 micro experience useful. Some BASIC and FORTRAN for one position. Applications: Information retrieval, database processing, sophisticated security systems and graphics in advenced angineering. Team leader capability useful. Challenging, rewarding and varied positions.

Systems Analysts

S. Herts and London

To £9,650 + banafits

Two clients, one with a small D.P. group and Burroughs equipment; the other with large IBM systems plus a unriety of minite. Both require experienced anelysts with a COBOL background. (Hardware not important.) These are attrective opportunities to be in at the start of major new projects. Enjoy the challenge of turnkey systems, or database and communications.

Technical Programmers

to £8,500

You need to be assembler experienced at mini or micro level to work on our micro based terminal systems. Work is a misture of development and support. Excellent friendly team and Company.

Apply in confidence to Terry Harvey by sending personal and career details, or contact him for an application form, evenings Gi. Missenden (02406) 4705 or daytime as below.



Harvey Recruitment

Maths/Computing Opportunity Teletraffic

Nr. Slough, Berks. c.£7,000

Our Plessey establishment at Stoke Poges, Nr. Slough, is mainly involved with research and development of advanced telecommunications system and primarily with System X, the new generation telephone network.

Our small teletraffic team, being pert of the Network Plenning Department, is responsible for investigations into the handling of lelephone traffic and for studying the effects of traffic overload.

We are looking for an engineer to perform mathematical and statistical analysis of problems in exchange design.

Applicants, ideally with some experience in a communications environment, should have a degree in Mathematics or Statistics. Some computer programming knowledge would be useful in order to assist your mathematical studies of these communications systems.

Plessey offers a generous relocation package along with other company

Per further information contact Pauline Graystone on Maidenhead (0628) 23351 or write to her at Plessey Telecommunications Systems Limited, Taplow Court, Taplow, Nr. Maldenhead, Berks



Senior Programmer

£8,538-£9,471 p.e. (Incl.)

We are seaking a Senior Programmar to head e team of three Programmers who hea 4 years' ICL COGOL experience and with at least one of the following lenguages: PLAN, T.P.L., or C.D.E., and a knowledge of Structured Programming. The Authority has invested heavily in Computer. Resources and is responsible also for providing Data Processing Services to the neighbourhood Goroughs of Surrey Haath and Runnymede. The Council's computer configuration comprises The Council's computer configuration comprises an ICL 2804 installetion with 98K, EDS60s, 9-Treck Tape Decke, Trein Printer, 1501 CDE date entry and on-line anguiry and Cash Receipting via 7502s at each Authority.

each Authority.

MINIMAC is used for on-line programming end investigations are in hend to upgrade the configuration heving regard to the heavy commitment to on-line systems. There is an extensive devolopment programme and the successful applicant will be crosely involved in this. TEMPORARY HOUSING will be evailable in epproved cases along with generous removal and disturbance allowonces together with legal fees on house purchese up to £1,500.

Please contact the Chief Personnet Officer, Council Offices, Woking, Surrey (Tel. STD 04882 5931 Extn. 17) for application form and job description. Closing date: 22nd April, 1981.



WIGGINS TEAPE (U.K.) PLC

A Rayshoun Company

Terminal Systema Communicationa Products

DATA PROCESSING

We are a worldwide menufecturer and distributor of fine and speciality papers. We need extre staff to help with an expansion in computer based developments within our Group.

Wa operele a twin IBM 4341 configuration linked to en Wa operele a twin I6M 4341 configuration linked to en extensive U.K. network, including meny remote terminal systems, ISM 4331's and I6M Series 1's. The languages used are COBOL. ASSEMBLER, NATURAL in conjunction with ADABA6 data-base meningar.

We require the following additional staff at our Head Office in Basingstoke is limited amount of traval within the U.K. will be necessary).

AN ANALYST/PROGRAMMER SENIOR PROGRAMMERS **PROGRAMMERS**

in addition the company has a vacency for a PROCESS CONTROL/SYSTEMS

ENGINEER'. Applicants should have significant expariance on relevent equipment, although we are also looking for individuals: with potential.

With potential.
Wiggins Teape offers the conditions expected of a major U.K. employer including flexible working hours, aubaldised resteurant, non-contributory pension schama, etc.

Plaase contact Mrs. M. E. Gostling, Personnal Gervices Officer, Wiggins Teape (U.K.) PLC, Gateway Housa, Bea-ing View, Basingatoka, Hents. Talephone Gesingetoka 20262, ext. 3101 for application form.

WIGGINS TEAPE

Programmer/Analyst

required fo assist with the daystopment of computer systems at the Fund's Breast Cencer Unit based at Guy's Hospital Landon SE1.

Hospital, London SE1.

Ade 264 with a degree in Mathematics or mathematically based discipline hius two years post university experience in BASIC, on big (preferably DEC) inschines, and ence in BASIC, on big (preferably DEC) inschines, and experience in section as Knowledge of data base mensionement systams decreable.

Salary to £8000 b) if in exceptional circumstances sides consideration will be given to qualifications and experience.

Since:
Please send full Curriculum Vitae with starres and addingues of the observed of Miss 5, mit Hurley, imperial Cancer research Pund, Lincoln's Jan Fields, London WC2.

ASSISTANT DP MANAGER HOME COUNTIES TO £13,000 PER ANNUM

u ess a Senior Programmer, Project Leader or ms Analyst and wish to bate the next sten to Senior genealt, and have a COSOL/PUT background; (tein hone to hear shout this and other Sahlor CR variation



Sales **Executives**

Communications Products

Data Logic is one of the largest system houses in the UK - marketing a wide-range of computer based products and services.

In the Communications Products Division, based in London, the accent is on a systems approach right from simple point-to-point links through to highly complex network management systems. The products are comprehensive, sophisticated and readily adaptable. We already have a substantial base of prestigious clients providing first-class reference accounts. Technical back-up in the field is outstanding and ensures a highly prolessional approach to the user.

What we are now looking for are additional Sales Executives to sell these products.

The successful applicants will be able to show a successful track record selling high-value business in the communications or data processing

Alternatively, if you have a background in technical support in the data communications or data processing industry and feel you have what it takes to be a successful Sales Executive, we would be interested in hearing from you as well!

Guaranteed earnings, including a high basic salary are negotiable around £10k, and on target performance will earn another £5k in the

For more details contact; Ann Fortescue, Data Logic Limited, 29 Marylebone Road, London NW1. Tel: 01-486 7288

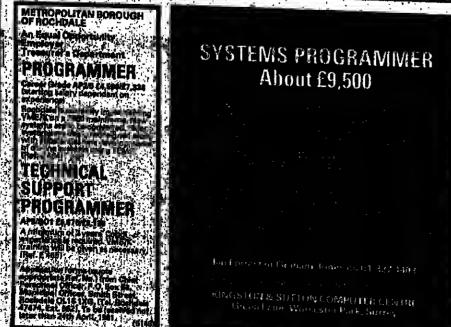
OPPORTUNITY! OPERATIONS MANAGER

Our primary nead is for a tough compatent D.P. parson who is e plennar, organisar and motivator and above all is user orientad. Operation skills are the primary requirement but knowledge of programming end systems is desirable to effectively control outside sub-

Wa ere a profitsbia menufecturing end ssias company amploying ona hundred end fifty paopla, located near Biggin Hill in Kent. The instellation is a basic 2903 with 24k and 20 mill EDS and a staff of

Over the lest three years we have developed and instelled a lerge number of accounting, sales and production DP based control aystems. We have user dapartments envious to expend the use of thase systems end davalop new ones. Our development is arrested at present by disorgen settion in the computer room. We need a forceful organisar who within three months can incresse the utilisation of the Herdwere and operators end can tackle the considerable housekeaping problems we have eccumulated, it is enticipated that when, after thrae months the DP department is operating regularly and the satisfection of user departments, we will agein launch into development work with the eld of outside consultant programmers and enalysts where necessery: Salary is £8,500; 4½ weeks' holidsy, subsidisad canteen and exciting

Please raply to Box No. 1138, C.W.



Career Opportunities Site Preparation Engineers

With systems installed in lifteen countries, including North Ancrico, our client has established a leading position in providing unique communication facilities which address the Message Switching and Electronic Fund Transfer sectors. Further development of advanced Electronic Office configurations to co-ordinate Telestration. PABX and Viewdata concepts will maintein the ordinanters.

odvantage.

Outstanding opportunities, with real prospects for rapid promotion within a highly professional marketing learn, exist for Sits Preparation Executives familiar with minicomputer equipment. A knowledge of DEC equipment, though not mandatory, would be a define

Tha Site Preparation Executives would be responsible for liels on with the users and the users' contractors, computer room planning, costing and approval of preposed configurations and arranging for their computations.

posed configurations and arranging for their commissioning.

Applicants should have technical experience allied in
a diplomatic personality as they will fulfil an important rice
in the establishment of overall customer satisfaction.

Our client is accustomed to providing very attractive
remuneration packages to ensure its continuing success
— competitive salary, bonus, company car or silowance
private medical treatment, pension scheme and tavel
opportunities are the ingredients which have contributed
to a twenty-fold growth during the last five years. Location:
London.

Applicants should telephone Gerry Meaking at PDL

PETERSON DAVIDSON LTD Heron House 19 Marylebone Road London NW1 Tel: 01-486 8991

Senior Computer **Operator** lwanting to go into programming

Cardiff

to work un that Honeywoll Level 64 DPS-2-computer. Sume shift work will become necessery. Initially the post-holder will be roaponsible for establishing an operating convironment for the College's financial system. As the online database membership system develops, ito/she will be required to assist the programming team and will utilinately be rosponsible for maintaining the system Al least two years' experience of operating at a senior level is required. GCOS on adventage, as well as on eptitude for programming, demonstrated by practical experience or appropriate

Salary scale £6745 to £8020, pay award panding, plus contributory pension schame. Application form and further details from the Personnel Officer, Rhyal College of Nursing. Handatta Piece, London W1M (AB, Talephone D1-580 2646.

Closing data for raturn of applications: Monday, 27th April, 1991.



ULSTER POLYTECHNIC Faculty of Science PRINCIPAL LECTURER DATA PROCESSING OR APPLIED LECTURER INSENIOR LECTURER DATA PROCESSING OR APPLIED STATISTICS (TWO POSTS)

Principal Lecturar £11298-£12591/£14238 £9624-£11328/£12141 Senior Lecturar £6462-£10431 Lecturer II.

Applicants for these posts should have a good Honours
Degree and/or a Professional Qualification. Tasching &
parishpe or professional/industriel apperiance with so
parishpe or professional/industriel apperiance with so
parishpe or professional/industriel apperiance with so
parishpe or professional professional and solvening.
Research and consultancy will be ancouraged.
Applicants for these posts should have a professional and solvening. Applicants for a Data Processing post should be able to contribute to the teaching of a range of date processing topics and to specialise in some of these areas:

contribute to the teaching of a range of date in topics and to specialise in some of these areas.

Applicants for an Applied Statistics post should have an interest in computing end be able to contribute to the interest in computing end be able to contribute to the interest in computing end be able to contribute to the interest in computing end be able to contribute to the interest in computing of spoiled statistics expose a vange of courses consprised meinly with business systems.

The Polytechnic is a direct grant institution with an independent Boerd of Governors. If opened in 1971 and field pendent Boerd of Governors. If opened in 1971 and field pendent Boerd of Governors. If opened in 1971 and field purpose built accommodation, including 830 residential press. These is a schame of gase and application forms which must be returned by 27 April, 1981 may be obtained by telephoning whitestopey (0231) 86131 Ext 2243 or by writing to the Establishment Officer, Ulster Polytechnic Shore Road, Newnownabbey, Co. April 8137 008 (198)

Career opportunities in Systems Programming in the North East

MAJOR IBM SITE

Our client, one of the country's leading industrial organisatione, ie proceeding with major development plene for the elreedy large IBM installetion. In the next few months we will be recrulting a lerge number of technical support and systems development staff into positione which we believe offer unparalleled opportunities for career development in both the ehort and long term.

Initielly we are seeking to recruit additional eystema progremming staff at both an experienced and trainee level. The hardware in use is impressive end the software on which successful cendidetes will work is extremely comprehensive. It cen be asid that if it runs on large IBM hardware then our client uses it, or has plans to do so. We know that it is e bit of e sweeping stetement and cennot be 100% true - but who cares about the odd few per cent.

Let us first sey that they are using or planning to use MVS, VTAM, CICS, DL/1, IMS, DMS, DCF, DLF, VSPC, TSO, SPF, CADAM, DISOSS.

We are realistic in our search for cendidetee end know that we cannot recruit people who heve worked with end heve in depth knowledge of all that softwere; however, some experience of the major items is important.

Systems Programmers

Experienced systems programmers are required with at least 5 years programming experience of which 2 years should have been In systems programming. Specific software knowledge should include MVS, VTAM end DL/1. (Ref CW/8109)

Trainee Systems Programmers

Candidetes must have 2 yeers programming experience in en IBM installation. Some essembler exparience whilst not essential would be an edvantage. (Ref CW/8110)

Attrective salariee will be negotieted in line with the Indicatione above but could be higher for an outstanding cendidete end e compreheneive relocation peckege ia evelleble in eppropriate ceeea.

Contact Ivor Norton at the Harrogate office to arrange an initial discussion which will be arranged on a regional basis.

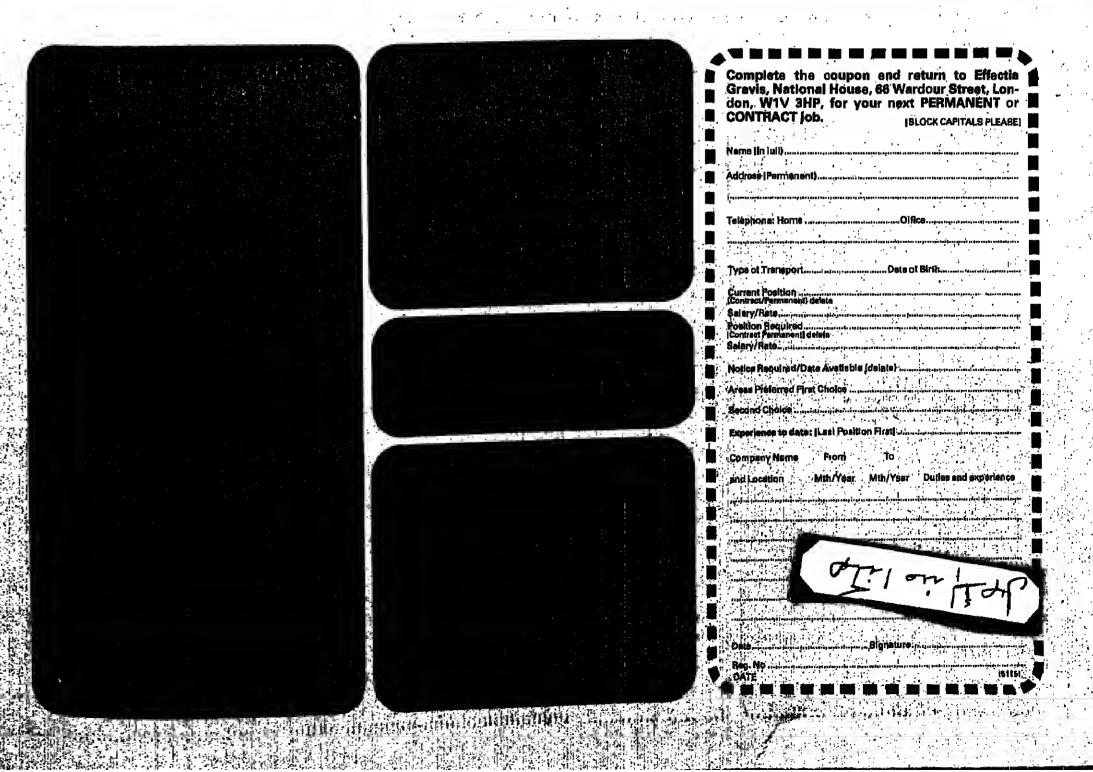


Ivor Norton Management Services Ltd. RECRUITMENT CONSULTANTS

HARROGATE - P.O. Box 63, Copthall Tower House, Harrogate HG1 1TS. Harrogate 88828 ONDON - 52, Shaltesbury Avenue, London W1V 70E. 0t 734 8862

GLASGOW - 11 Bothwell Street, Glasgow G2 SLY. 041 226 4811

24 HOUR ANSWERING SERVICE (0423) 55311



IRELAND

A COUNTRY WITH A FUTURE

For computer personnel Ireland represents a growth aconomy and a rapidly expanding industriel base with urgent emphasie on

Our clients wish us to identify computer professionals with genuine in-dapth experience in the following erees.

CICS-DOS/VSE

-Analyets who have designed end implemented et leest 1 system.

-Cobol Programmers with at least 2 years' experience and with e beckground in menufacturing or distribution.

SYSTEMS PROGRAMMING

Cendidetes with B.Sc. degree or aquivalent who can write compilers and who have experience of IBM, Digital or ICL compilers, Digitel or ICL compilers/operating systems

COMPUTER **PROFESSIONALS**

To cope with repid expension our cliente urgently require personnel with proven ex-perience in the following:

-Microcomputer Seles (Herdware) Softwere).

Consultant Level Analysts.

-Senior Progremmers (Cobol). -Progremmers (RPG11-Mapice).

THE REWARDS

e dynemic environment and shering one of the best quality of lifestyles in Europe, you will enjoy selety levels which reflect a buoyant economy and growth conditions.

Employee benefits end training facilities are geered to the highest internetional eten

Compeny cars are provided in many cases end where appropriate generous relocation assistence is evelople.

Housing is considerably cheaper than most parte of the U.K. and a government grant of up to £2,000 is available to new house

Applications will be strictly confidential

Phone of write now Quote Ret. No CW46.



nsight Consultants MPOlireland) Limifedi: 19ight House 1 Upper Fitzwillem Street ublin 2 ephone: (001) 606644

System Supervisor

Our Management Information Systems Department now requires an experienced System Supervisor to eugment its team

The successful applicant is likely to have a programming The successful applicant is likely to have a programming background with a strong interest in Systems Programming including JCL. The ability to control e multi-programming system including a communication network is required. Responsibilities include scheduling, communications monitoring, system libraries and disc utilisation. The installation uses a Remote Oata Entry system – the incoterm RDE 770 – which is programmable and the Supervisor is responsible for its performance. The mainfreme is a Honeywell L64 end current development is towards a communications environment.

There is a total Operations Staff of eight, reporting to the

A salary of £8,500 is envisaged and generous ocation assistance will be evaliable if necessary. Please telephone for an application form or send detells of age, qualifications and relevent experience to:

C. N. Watford, Personnel Manager, AMF Legg, Newbury Road, Andover, Hents. Tel: Andover 62199.

SENIOR SCIENTIFIC

ASSISTANTS

To provide support to the Military Operational Research studies as members of project teems. This involves the design, testing and running ut computer programs, operaling computer fecilities, interactive terminals and graphics displays: preparation of inputs for simulation models; deta collection and analysis; presentation of results.

Education to, with recognised quetilications at, the Higher Technical School/College level. Experience in computers and programming languages lincluding FORTRAN!, deta-reduction techniques.

Cendideles who are nationale of one of the NATO countries are invited to sand tull details of training, experience and pareonal date to the Personnel Officer, SHAPE Technical Centre, P.O. Box 174, 2501 CD The Hagus, Natherlands, within four weeks of the expessence of this edvertigement. Please quote reference (CWOA) whose applying.

Gross ennual selsry ltax-tree) for non-Dutch married officials without children.

AME

Applications to be addrassed to: EISCAT SCIENTIFIC ASSOCIATION Box 705, S - 981-27, Koruna, Sweden

SHAPE TECHNICAL CENTRE Senior

CROYDON from £7,153 p.a.

Computer Operator

You will be responsible to the Shill Controller to essist in the officient operation of the Region's computer equipment. Your duties will include job schednling, monitoring of operating systems and assisting in the training of subordinets stalf.

The procent instellation comprises of an IBM 3032 and Amdahl V7. A wide veriety of both batch and on-line applications are well as the stalf. ond Andani V7. A wide veriety of bein batch and on-line applications are underleken supportings large network throughout the Region. You should be prepered to work on a shift system ent heve a minimum of two years' operating expuriencu reing NVS JES2 and VM. A basic knowledge of JCL and the use of IBM utilities is

Write, giving full details, within 7 days, and quoting Ref. 0.8788 to: Personnel Manager, SOUTH EASTERN GAS, Segas House, Kotherine Street, Croydon CR8 tJU.

ANAL/PROG N. BUCKS, to £0,700 - Car Scheme Minimum 2 years' IBM/COBOL. Involved in de-velopment meintenence on a TOTAL DATABASE System. ENVIRON 1.

IBM Hardware with OL1 or PLt to work in the System Programming erge. Responsibility for all System Softwere. Relocation.

Minimum 2 yeers on ICL Herdware. Involved in ON-LINE Developments. COBOL background on 2900 series exp. preferred. Relocation.

ANALYST IN 18,500 Minimum 2 yeers on IBM DOS VS POWER with a COBOL background, CtCS exp. preferred.

JUNIOR AVALYST HEATS, IN 18.208
To work on IBM Hardwera CICS with PL1 or COBOL:
Relocation.

Excellent carear prospects, responsible to DEM involved in eupport RAMIS or ICCF/ETSS with FOR TRAN BASIC on IBM Meinframe.

Contast: HOWLETT COMPUTER SERVICES, Ravenstone Chambers, High. Street, Leighton Buzzard, Bedfordehire. Telephone: 0525 384735 or 377518

HERTS;

SOUTH EASTERN

SYSTEMS PROGRAMMING (EUR-OFS) IMS and VSI

The systems development division of a leading international bank is about to emberk on a major programme of installing new and enhancing existing systems, and require additional personnal with the following experience:

* IMS GYATEMO OPECIALIST

To instell, document and parformence test new IMS detabase soltwere, advising on initial act-up and subsequent monitoring and maintenance.

VS1 6YSTEM6 SPECIALIST To Install enhancements to existing VS1 softwers, investigating new options and iscilities with consequent benchmarking and documentation.

The company offer excellent negotiable setaries trom £10,000 to £14,000 depending on experience etters benefit package including personal loans, martgage facilities and a convenient and pleasers.

OPERATIONS AND SUPPORT IBM OS/VS1

A minimum of two years relavant DS/VS1 experience is required. Additional knowledge of VM and IMS would be advantageous. Training will be given to the successful condidete on the extensive hardware and facilities used in their banking applications. Salary to £6,500 including

TRAINER TECHNICAL SUPPORT OFFICER

jege lacilities in addition to a comprehensive tienetit package.
Please ling JANET WARREN on: 01-438 7851
KEY PENATURA ASSISTANCE LIMITED

CONTRACTS

HONEYWELL IDS/TDS ANALYST/PROGRAMMER
Staining Apetrior English and South-East

NCR NEAT 3 LEVEL 2 PROGRAMMERS Stating & S.A.P. for London

Phone NOVI 01 #29 2186 or 01 423 1983

VIKING RECRUITMENT LIMITED

VIKING House Peterborough Road, Harrow, Middix, HA1 2XU

BOX NUMBERS Box number replies should be addressed to

OVV _ COMPUTER SERVICES

do Computer Weekly Déract House : Stamford Sirée! London SE! SLU

PROGRAMMER/EISCAT

A vacancy will orise for a Programmer in the Head-quarters Staff of the European Incoherent Scaller

The Haodquarters is located in KiRUNA, the observing stations near TROMSO, IN KIRUNA and in SODANKYLA. The perticulor vacancy to be filled will require the successful candidate to be stationed at the RANFJORIMOEN facility near TROMSO but he/size must be prepared for parely TROMSO bilt he/sha must be prapared for periods of datached duly in KIRUNA AND SODANKYLA.

Major job assignments in co-operation with existing programming staff to dayalop and last the systems needed for operations and deta acquisition — eseist scientific personnel in preparing soft-wore for the execution of IONOSPHERIC experi-ment participate in off-line date ensiyels.

Prior experience in operating Research Reder Systems and intimate knowledge of NORD 10 computers would be advantageous. From time to lime the operating schedule will necessitate irregular working houre.

Salary according to qualifications. Closing date to applications: April 20.

Anexclusive opportunity to pioneer in the most advanced recruitment medium of the 80's

We invite you to join us in pioneering what may well be the biggest breakthrough in computer recruitment history.

IPC Electrical-Electronic Press Ltd. have launched a Prestel Viewdata appointments service for computer personnel — the first of its kind—and Computer Weekly advertisers are being given an exclusive opportunity to use it.

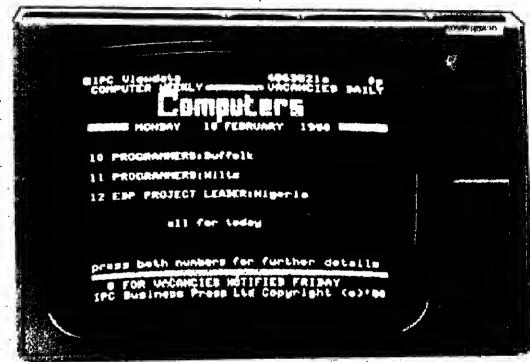
For just £75 extra, any position advertised in Computer Weekly will also be announced on Prestel screens for five days. The screen announcements will contain the main details given in the Computer Weekly advertisement, And this special computer appointments. service will have its own key access number on Prestel.

The Prestel information service is now available in public libraries, universities and computer centres across the country—and many key computer personnel are already regular users. Your advertisement will be telecast on Prestel the day we receive it - up to six days before it appears in Computer Weekly itself — which could enormously increase the speed of response as well as the number of

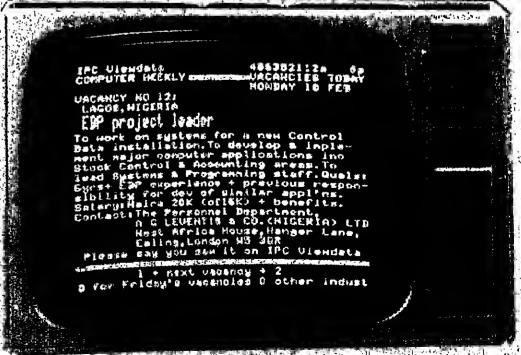
Start your 1980s recruitment programme by harnessing the key information medium of the new decade. Contact Brian Durrant, Classified Advertisement Manager, IPC Electrical-Electronic Press Ltd., Quadrant House The Quadrant, Sutton, Surrey, SM2 5AS. Tel 01-661 3106.

Note: A parallel service is available to Electronics Weekly recruitment advertisers.

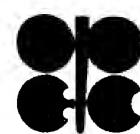
HOW IT WORKS



On dialling the computer appointments number, applicants are immediately informed what jobs are available for the day, and given a key number for each. They can also obtain details of the previous four days' vacancies, so that each job is in effect on offer for a working week, at a cost to the advertiser of only £15 per day.



On pressing the specific job's key number, applicants are given full details of the vacancy (if there's room, all the details that you have in given in your appointments ad including how where and when to apply. This amounts to a 5-day recruitment campaign, screened to a highly select audience.



Organisation of the **Petroleum Exporting Countries**

offars experienced Dete Processing professionals most challenging job opportunities in its Computer Section. Applicants are invited from candidates with basic academic qualifications up to a Technical or University Dagree or aquivelent professionel training plus a minimum of 5 years' working axparience in the computar applications field and in FORTRAN, PL-1 or Mark IV programming. Fluent English is essential.

DATA BANK **ADMINISTRATOR**

Profound knowledge in File Menegement Systems and DPMS packages is necessary. Experience in the design, implementation and operation of data banks, in the enhancement of performence end in establishing standards for oparational procedures and documentation is required. The successful candidates should have implemented et leest e medium-eize de lebase epplication using one of the major DPMS in e multi-user environment.

SYSTEMS PROGRAMMER

Deap knowledge of IBM operating systems (MVS/TSO, VM/OMS) and their escoclated herdwere components. Must be familiar with instelletion and maintenance of softwars peckeges end e deteiled knowledge of IBM essembler lenguege, JCL end usege of interactive monitore. Knowledge of CICS end STAIRS would be en esset. Some knowledge of Digital PDP series minicomputers elso welcome.

APPLICATION PROGRAMMER

Specific working experience in the developmen of D.P. applications is required; thorough prectice in FORTRAN is necessary, ee well as besic knowledge in operating systems, DPMS and file management systems. Educational background in methods of Operations Roseerch and experience in lerge-scele modelling is welcome.

The posts are parmanent and provide for tax-free salary and eocial benefits. Applicants are requested to send their detailed curriculum vitae including job history and salary progression as wall as a recent photograph to:

OPEC

Personnel and Administration Department Obere Donaustrasse 93, 1020 Vienna, Austria

CONSULTANT PROGRAMMERS/ ANALYSTS Three years' experience. Circ CITY CENTRE SURE NU

CLASSIFIED

ADVERTISING USE

DIRECT LINE 01-661 0121

LONDON W.1.

HONEYWELL LEVEL 66 IDS/TDS

DEC BASIC +

ANALYST/ **PROGRAMMERS**

UP TO £10,000 + CAR

ENTERPRISE

Advenced Media Marketing Systems

ENTERPRISE, the air-time salas systam chosen by 10 of tha .15 ITV compenias, is still axpanding fast. Further davalopmenta to covar Channal 4 and Independent Locel Redio aglas ara in progrees. In eddition, a nationwide natwork of ITV compenies is being set up to provide a colour Viewdata svetam for Advartising Agencies basad on DEC Minis.

If you have good relevent expariance contact us now. You will join a professional and highly-motivated group whare ability and parformence are the key to success. The rewards are correspondingly high. As wall as a great deel of job satisfaction, thay include a compeny car, twice-yearly raviaws, and profit related bonuses.

Briaf dateils, pleese, to Nall Cumming,

ENTERPRISE AIR-TIME SYSTEMS LIMITED 25 BRUTON LANE LONDON W1X 7LB.

or talaphone 01-499 8771 Now.

THE COMPANY

Turnkey Systems House specialising in MiNI-COMPUTERS to first-time users. Rapidly becoming a Merket Leader in this fast-growing market.

TOP SYSTEMS ANALYSTS/DESIGNERS

With solid experience in Financial/Accounting Applications including Order Processing and Stock Control. To design interactive Systems based on high powered Mini-Computers. Requires fluency and authority when dealing with a wide range of liret-time

Extensive Accounting Systems experience is assential. Therefore, you must have done the job before, Great possibility for a DPM yearning to return to a "Doing Job".

STAR COMPUTER GROUP
64 Great Eastern Street, LONDON EC2A 3OR
Tel: 01-739 7633

GUIDE TO RECRUITMENT CONSULTANTS IN THE U.K.

LONDON & H. COUNTIES (LH). MIDLANDS (M). NORTH (N). SCOTLAND (S). OVERSEAS (O)

Computer Professional Recruitment Consultangu "COMPUTER PROFESSIONALS MAKE SURE WE HAVE YOU IN MIND"

Evening Breiton 880

FOR THE BEST
PERMANENT AND
CONTRACT JORS IN THE
NORTH OF ENGLAND

WITH MANY THE STATE OF THE STA Plen PROGRAMMERS
Plen (Bentor bithhilat) he Plen Company Ltd



Ivor Norton Management Services Ltd. Rebrülliment Consulting Olyislan 52 Sheresbily Avenue, Lohdon W (V 70 g 01 734 8652 (24 how jörkyethis servjes i 7. Box 63. Copp in Tower House. Irodele HG1 179. Tel: Harrogale 58628

COMPUTER INDUSTRY SPECIALISTS MSIGHT MARKETING & PERSONNEL CONSULTANTS LTD.
ANSTIN HOUSE, CHARLOTTE STREET, MANCHESTER, TEL. 081-200 7024;

FOR FURTHER DETAILS OF THIS WEEKLY FEATURE CONTACT

OWEN KELLY, 061-872 8861

A PROFESSIONAL REDRIFTMENT, SERVICE TO CLIENTS AND CANGIDATES

Visconcies in Schokant: England stid shread Film soyes of Nork to lind conductor shalf.

THE CHARLOTTE SQUARE SUINDENDED SAFE SUINDENDED HELD ADDRESS OF STATES OF STATES OF STATES.

Sales & Marketing Recruiters Ltd

Victory House, 99 Regent Street, London W1R 7HB A Sales and Marketing Services Company
London & Midlands

Technical Support Manager

Have you got what it takes?

(—To manage a group of applications specialists and support our clients and salesforce!)

The person we are seeking already has experience of managing a team of pre/post-sales analysts for a hardware manufacturer or computer services company and working within a variety of applications and industries. He or she will be an energetic and enthusiastic person accustomed to the demands of a sales and service oriented environment. Like as not there will be only one problem with this person's present situation - lack of challenge and career opportunity. If the answer is a move to a more progressive and dynamic company environment, this job could well be the answer.

The Technical Support Manager is responsible for a wide range of duties

Control of client projects. Recrultment, Training. Individual career development. Expansion of major accounts. Interface with sales management. New product

The job is located in Central

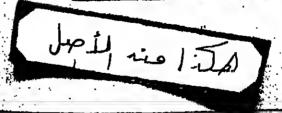
London

and as a market leader within a major international corporation the company is able to offer significant fringe benefits and an attractive income package of

£16,000 + Company Car

Please supply complete career details to Alasdair Scott quoting reference JPA/104.

Tel: 01-734 9776



2900 Database Development Senior Programmer/ **Systems Analyst**

Salary £8,000 - £9,400

We have recently taken delivery of a 4-megabyte ICL 2956 and are starting to devalop all our systems in a VME/B - Database dryllyoment. We are looking for an exparienced progremmer with an interest in the technical aspects of database. Implementation to join a newly creeled small Database
Administration team. Rasponaibilitias will include advising
Systems Analysis and Programmers in the use of IDMS, ICL
Data Dictionary, 2900 COBOL and SCL, and dayaloping database procedures and security systems. Training provided

finecessing, liexible working hours, 5 weeks holiday, and elocation expenses in spproyad cases. Application forms and lurther

details from Controller of Parsonnel Services, Town Hall. Forest Road, London E17 4JF (18) 01-531 8899 — 24-hour answering service)

Please quote Ref. 83875, closing date lat May

Waltham

SALES **PROFESSIONALS**

VERY HIGH BASIC - 2-LITRE CAR EXCELLENT COMMISSION (UNLIMITED) OTHER BENEFITS Good prospects for early promotion

Our cliant will be interested in telking with you if you have a successful selling record and a working knowledge of one or more of the following:

Commercial Applications
Distributive Processing Systems Key to Diac

In return you will be offered the opportunity to use your professional skills in an exciting environment with unlimited earning potential, in the first instance islaphone Cambarley (0278) \$2698 (office hours) or Femborough (0282) \$16978 to 10 p.m.



COMPUTER CONSUMER ADVICE BUREAU LTO, Computer sind Recruitment Consultants 5 Graph Lena, Blackweter Near Camberley, Surray testor

2900 IDMS PROGRAMMING IMMEDIATE EMPLOYMENT WITH CONSULTANCY COMPANY IN HAMPSHIRE

FULL TIME/CONTRACT CONTACT, ANN CREASEY BASINGSTOKE (0256) 52221 (DAY) BASINGS FOKE (0256) 68215 (EVENING) advertisement isements deliberately use ment agency: make tele the name of an employment agency rather than that of discover who the company the potential employer. This is because a company osing s, but clearly there would he little point in using an agency if the facts could be ils own name rins a severe

COMPUTER WEEKLY, April 9, 1981

to an agency

risk of revealing, if only by implication, information

about its activities and gen-

eral situation to such in-

ierested parties as competi-

tors, recruitment agencies

A lot of implied informa-

tion can be gleaned from re-

eruitment advertising, such

as competitive data related

o marketing strategy; in-

ormation for existing em-

ployees related to terms of

employment for purticular

inb functions; and the nos-sibility of high-level com-

pany problems due to the

ement of senior per-

- and its own staff.

How to respond

picked up so easily. Must recruitment companies are prepared to state whether the name of their client is contained within a list of previous employers. declared by the applicant just in case he is applying for a job with a previous or even

Even in such extreme giremistances, in recruitment agency can afford to iconardise its protessional tegrity by breaching the confidentiality of its candidates or clients. Coursequently, there is no harm in applying for any job even it one is subsequently under whelmed by its attraction.

pany, avoid any agency which is prepared to discuss

the requirements of other

tely excluded from the job

originally applied for. Any truly professional and ethi-

cal agency will guarantee

that response to advertise-

ments which have been funded by the client will be considered for their require-

ment alone, until such time as either the candidate or the

elient specifically declare

Eventually, the candi

dates with appropriate qual

ifications are interviewed by

this is when the name of the

potential employer is usually revealed, along with details

of the company's history; product, marketplace and

100, this process is absolu-

jely straightforward and handled with complete pro-

fessionalism by all parties

concerned. The agency ad-

vises the candidate on the annability of his qualifica-tions for the jet and the

compatibility of the job with

The right people for the

the needs of his career.

the job itself.

their total lack of interest.

Recurrent advertising suggests a high rate of staff The chances are that the inb opportunity will be of lurnover rather than rapid expansion; advertisements interest and as a result, forsre a source of potential business for all recruitment mal application can be made in order to proceed to the agencies; and readvertiseinterview stage, provided ment of a previously failed there is masonable compatibility herween the specificaexercise suggests the job is tion of the job and the exunattractive. perience and qualifications If the job is advertised on behalf of a specific com-

However, the most common reasoo why companies advertise under the banner of a recruitment agency is not an absolute need for secrecy, but an endeavour to communicate with potential candidates who, as part of the market's overall pupulation, are likely to have some misconception of the true nature of the organisation It is the nature of

salespeople, for instance, often to have a completely aundiced view of their competitors. They are so occustorned to selling against them that they become selfconditioned into believing that nothing good could poscompanies, and are fore unlikely to contherefore unlikely to con-sider them sa potential

future employers.

By advertising vin an iudependent recrultment, agency a company is able to avoid this and other kinds al infounded or at least out-ofdate prejudice, and make sufficient contact at least to get the truth across via a responsible third party.

As a result of this, candidetes who respond by letter ware of the advertiser's real identity. Many applicants PUZZLE



job (as opposed to merely the best of the applicants) are shortlisted. The em-ployer and the candidate there meet and eventually work together: Whatever the outcome, the sir is clean; with he corruption of the character or security of the individuals concerned.

Unfortunately, this is not always the case, and next week I will write about some of the risks to potential employers and employees alike. Alàn Williams

COURSES

WA NON-RESIDENTIAL be held at the Kensington workshop entitled Practical Close Hotel, London, begin-Project Management is in ning on April 27. The tee is terified for those controlling U25 + VAT and details are

tenden for those controlling C425 + VAT and details are by likely to control computer available from the organiser, projects. The course, which BIS Applied Systems. York examines the costs, control House, 199 Westminster and record revolved in such Bridge Rush, London III projects can be adjusted to 7UT. Afternatively, relepersural style and the general phone Jackie Preuss on Ulproject covironment, II will 2019237.